SURROUND RECEIVER

FR735/00/01/04

MX735/21/22/34

Service
Service
Service

Service Manual

TABLE OF CONTENTS

Page

Location Boards / System info 1-2
Technical Specification 1-3
Service Tool / Measurement setup / Safety 1-4
Warning / Handling Chip components 1-5
Abbreviations 1-6
Instruction for Use 2-1
Wiring diagram 2-20
Block diagram 3
Service Test program 4
Dismantling hints / Service positions 5
Front Board 6
Tuner 95 diagram 7A
ECO 5 Tuner diagram 7B
Dolby Prologic Board 8
Mains Board 9
Mono Board 10
Exploded view 11
Electrical partslist Mono Board 12

Safety regulations require that the set be restored to its original condition and that parts which are indentical with those specified be used.

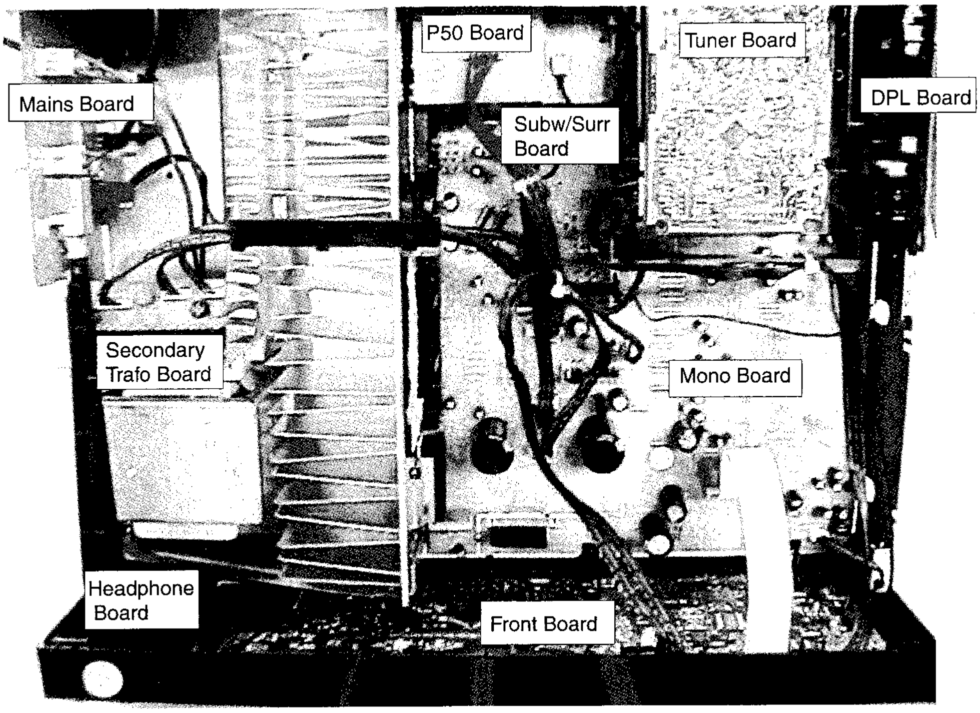
Copyright 1995 Philips Consumer Electronics B.V. Eindhoven, The Netherlands
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise without the prior permission of Philips.

Published by MD 9916 Service Audio Printed in the Netherlands Subject to modification 4822 725 23987

PCS 69 730

PHILIPS

LOCATION OF PRINTED CIRCUIT BOARDS


P50 Board
Tuner Board
Mains Board
DPL Board
Subw/Surr Board
Secondary Trafo Board
Mono Board
Headphone Board
Front Board

SYSTEM INFORMATION

Receiver	Front speaker	Center Box	Surround Box
MX 735/22 include :			
FR735/00	2 x FB735/960F	FB735/960C	2 x FB735S
MX 735/21 include :			
FR 735/01	2 x FB735/960F	FB735/960C	2 x FB735S
MX 735/34 include :			
FR735/14	2 x FB735/960F	FB735/960C	2 x FB735S

VERSION VARIATIONS

Type & version / Features & Board in used	FR735		
	/00	/01	/14
Tuner board - Tuner 95	x		
Tuner board – ECO 5		x	x
RDS	x		x
P50 code (cinema link)	x	x	x
# Power channels	4	4	4
Center Pre-out	x	x	x
Surround Pre-out	x	x	x
Mains voltage	230	120/230	230
Voltage selector		x	

TECHNICAL SPECIFICATION

General

Mains voltage :230V for /00/14
:110V/240 switchable for /01
Mains frequency : 50Hz for /00 /14
: 50/60Hz for /01
Power concumption : ≤ 2W at stby
Dimension : 138x435x350 mm
Remote control : RC2526

Amplifier

Output power
L+R : 2x50W at 6Ω D= 0,7% (1kHz)
Center : 50W at 6Ω D= 0,7% (1kHz)
Surround : 50W at 2X3Ω D= 0,7% (1kHz)

Distortion (1W)
40Hz -1kHz -20kHz : ≤ 0,05%(L,R,C)
: ≤ 0,2% (Surround ch.)

Headphone : 6,3mm stereo jack with switch

Crosstalk between source —1kHz : ≤ -65dB
(1W) 250Hz – 10kHz : ≤ -60dB

Crosstalk between channels -1kHz : ≤ -45dB
(1W) 250Hz – 10kHz : ≤ -40dB

Frequency response
Left/Right/Center : ≤ 20Hz – ≥20kHz (-3dB) Limit
Surround channel : ≤ 100Hz – ≥7kHz (-3dB) Limit

Power stage protection : Shortcircuit
: DC (Vout ≥10V)
Temperature : Transformer (≥140° Celcius)
: Heatsink (≥140° Celcius)

Input sensitivity
CD : 250mV impedance ≥ 47kΩ
CDR/TAPE : 250mV impedance ≥ 47kΩ
VCR : 250mV impedance ≥ 47kΩ
TV : 250mV impedance ≥ 47kΩ

Output sensitivity
CDR/TAPE : 250mV impedance ≤ 1kΩ
VCR : 250mV impedance ≤ 1kΩ

Output sensitivity (variable)
Center pre-out : 800mV impedance ≤ 1kΩ
Surround pre-out : 800mV impedance ≤ 1kΩ

Equalizer

Loudness
(volume ≤ -20dB Ref: 1kHz=0dB) : Bass 100Hz +6 dB
: Treble 10kHz +3 dB

Tone control (Ref: 1kHz=0dB)
: Bass 100Hz -10dB →+10dB
: Treble 10kHz -10dB →+10dB

DSC settings		100Hz	1kHz	10kHz
Personal	dB	0	0	0
Movie	dB	+ 4	+2	+4
Speech	dB	- 4	+2	- 2
Music	dB	+ 4	- 2	+2
Multimedia	dB	+ 8	0	+6

Dolby Pro Logic

Stereo bypass from : Lt , Rt into Left, Right
Dolby Pro-logic decoding : Lt , Rt into Left, Right, Center,
: Surround
Dolby 3 stereo decoding : Lt , Rt into Left, Center, Right
Dolby Phantom decoding : Lt , Rt into Left, Right, Surround
(Phantom = no center speaker)
Hall : Lt , Rt into Left, Surround, Right
Surround delay : variable
Center mode : Large , small
Testtone

Tuner

RDS : Only in /00 /14

FM
Tuning range : 87.5 – 108MHz
: 65.81 – 74MHz for /14*
: 87.5 – 108MHz for /14*

Grid : 50kHz for /00
: 50 & 100kHz for /01*
: 30 & 50kHz for /14*

IF frequency : 10.7MHz ±25kHz
Aerial input : 75 Ω coaxial for /00/01/14
Sensitivity at 26dB S/N : ≤ 7µv
Selectivity at 600kHz bandwidth : ≥ 50dB
Inmage rejection : ≥ 25dB [75dB]
Distortion at RF=1mV,dev.75kHz : ≤ 3% [2%]
-3dB Limiting point : ≤ 7µV
Crosstalk at RF=1mV,dev.40kHz : ≥18dB [26dB]

MW
Tuning range : 531 - 1602kHz for /00/14
: 531 - 1602kHz for /01*
: 530 - 1700kHz for /01*
Grid : 9kHz
: 9 & 10kHz for /01*
IF frequency : 450kHz ±1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : ≤ 4.0mV/M
Selectivity at 18kHz bandwidth : ≥ 18dB
IF rejection : ≥ 45dB
Inmage rejection : ≥ 28dB
Distortion at RF=50mV,m=80% : ≤ 5%

LW only in /00/14
Tuning range : 153 - 279kHz /00/14
Grid : 3kHz
IF frequency : 450kHz ±1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : ≤ 7.0mV/M
Selectivity at 18kHz bandwidth : ≥ 24dB
IF rejection : ≥ 26dB
Inmage rejection : ≥ 35dB
Distortion at RF=50mV,m=80% : ≤ 5%dB

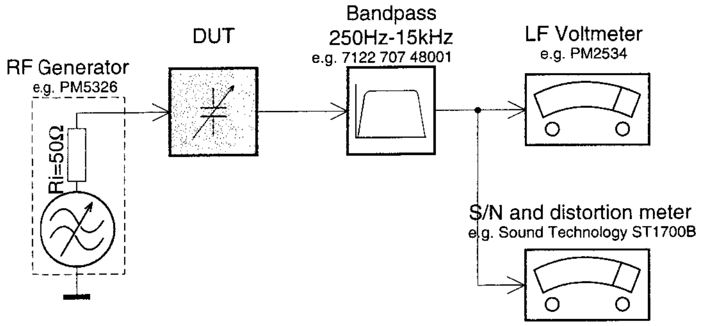
[...] Values indicated are for "Tuner 95 Board" only
* Setting is software controlled

SERVICE TOOL

Dolby Prologic Test Disc..............................4822 395 10216

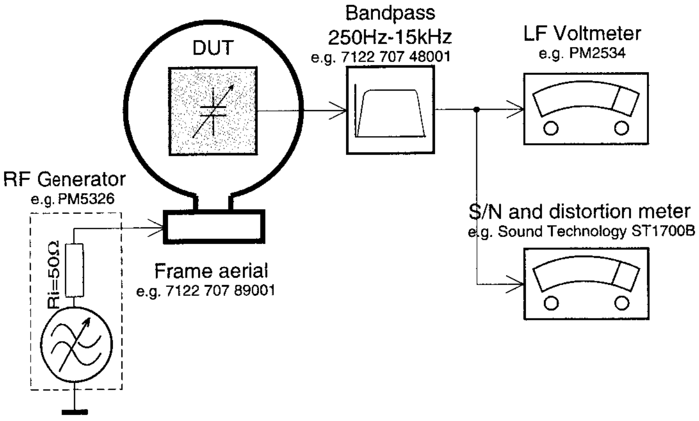
MEASUREMENT SETUP

Tuner FM


Bandpass
250Hz-15kHz
e.g. 7122 707 48001
DUT
LF Voltmeter
e.g. PM2534
RF Generator
e.g. PM5326
Ri=50Ω
S/N and distortion meter
e.g. Sound Technology ST1700B

Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilottone (19kHz, 38kHz).

Tuner AM (MW,LW)


Bandpass
250Hz-15kHz
e.g. 7122 707 48001
DUT
LF Voltmeter
e.g. PM2534
RF Generator
e.g. PM5326
Ri=50Ω
Frame aerial
e.g. 7122 707 89001
S/N and distortion meter
e.g. Sound Technology ST1700B

To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday´s cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

SAFETY

(GB)
Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.
Safety components are marked by the symbol ⚠

(F)
Les normes de sécurité exigent que l´appareil soit remis à l´état d´origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.
Les composants de sécurité sont marqués ⚠

SAFETY

⚠

(D)
Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Gerätes darf nicht verändert werden. Für Reparaturen sind Originalersatzteile zu verwenden.
Sicherheitsbauteile sind durch das Symbol ⚠ markiert.

(NL)
Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.
De Veiligheidsonderdelen zijn aangeduid met het symbool ⚠

(I)
Le norme di sicurezza estigono che l´apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambiago identici a quelli specificati.
Componenty di sicurezza sono marcati con ⚠

WARNING

(GB) WARNING

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wristband with resistance. Keep components and tools at this potential.

(F) ATTENTION

Tous les IC et beaucoup d´autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévite pourrait être considérablement écourtée par le fait qu´aucune précaution nést prise à leur manipulation.
Lors de réparations, s´assurer de bien être relié au même potentiel que la masse de l´appareil et enfileer le bracelet serti d´une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l´on utilise soient également à ce potentiel.

ESD

(D) WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.
Sorgen Sie dafür, daß sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.
Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

(NL) WAARSCHUWING

Alle IC´s en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen vermindern. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

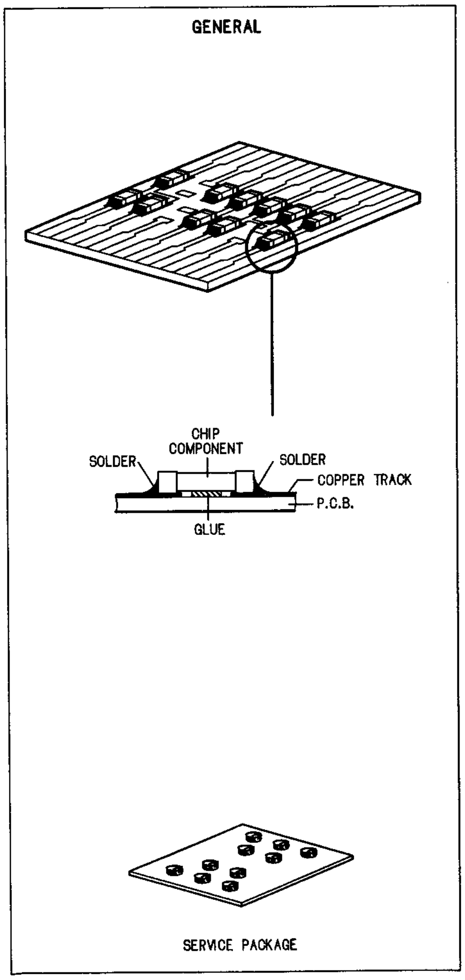
(I) AVVERTIMENTO

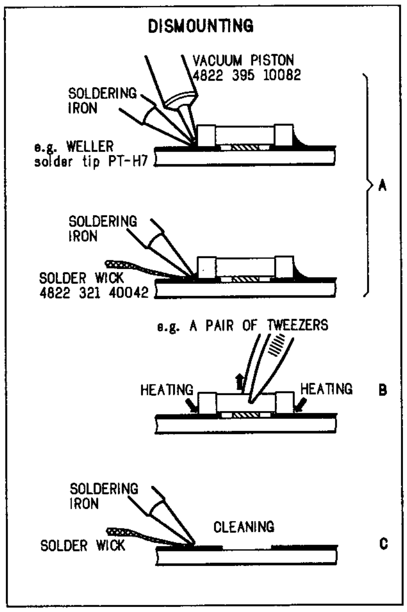
Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparationi occorre quindi essere collegato allo stesso potenziale che quello della massa delàpparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

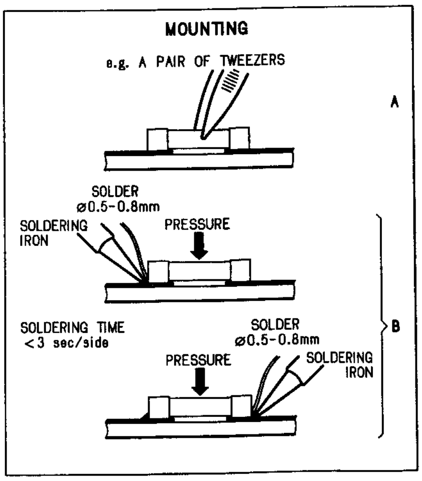
(GB) AVAILABLE ESD PROTECTION EQUIPMENT :

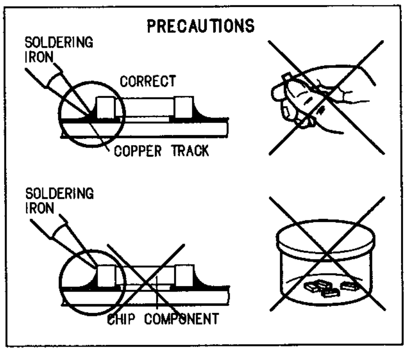
anti-static table mat large 1200x650x1.25mm	4822 466 10953
small 600x650x1.25mm	4822 466 10958
anti-static wristband	4822 395 10223
connection box (3 press stud connections, 1M)	4822 320 11307
extendible cable (2m, 2M , to connect wristband to connection box)	4822 320 11305
connecting cable (3m, 2M , to connect table mat to connection box)	4822 320 11306
earth cable (1M , to connect any product to mat or to connection box)	4822 320 11308
KIT ESD3 (combining all 6 prior products - small table mat)	4822 310 10671
wristband tester	4822 344 13999

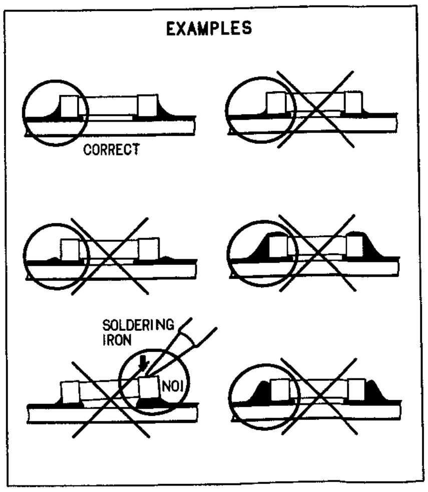
HANDLING CHIP COMPONENTS


GENERAL
CHIP COMPONENT
SOLDER
SOLDER
COPPER TRACK
P.C.B.
GLUE
SERVICE PACKAGE


DISMOUNTING
VACUUM PISTON
4822 395 10082
SOLDERING IRON
e.g. WELLER
solder tip PT-H7
SOLDERING IRON
SOLDER WICK
4822 321 40042
A
e.g. A PAIR OF TWEEZERS
HEATING
HEATING
B
SOLDERING IRON
CLEANING
SOLDER WICK
C


MOUNTING
e.g. A PAIR OF TWEEZERS
A
SOLDER
ø0.5-0.8mm
SOLDERING IRON
PRESSURE
SOLDERING TIME
<3 sec/side
SOLDER
ø0.5-0.8mm
PRESSURE
SOLDERING IRON
B


PRECAUTIONS
SOLDERING IRON
CORRECT
COPPER TRACK
SOLDERING IRON
CHIP COMPONENT


EXAMPLES
CORRECT
SOLDERING IRON
NO!

ABBREVIATIONS

A

ac 0VA	AC 0 Voltage
ac 10VB	AC 10 Voltage
ac 110VB	AC 110 Voltage
ac 120VB	AC 120 Voltage
ac gnd	AC ground
ac1	AC voltage 1
ac2	AC voltage 2
ac3	AC voltage 3
ac h1	AC high voltage 1
ac h2	AC high voltage 2
ac l1	AC low voltage 1
ac l2	AC low voltage 2
amp lr on	Amplifier Left - Right On
amp mute lr	Amplifier mute Left - Right
amp mute c s	Amplifier mute center surround
amp mute c s sub	Amplifier mute center surround subwoofer
amp pd	Amplifier power down
amp prot	Amplifier protection
amp s on	Amplifier surround On
amp stby	Amplifier Standby
av gnd	Audio ground
av l	Audio Left
av r	Audio Right

D

d gnd	Dolby ground
dd req	Dolby decoder request
dpl c out	Dolbyprologic Center out
dpl clk	Dolbyprologic clock
dpl gnd	Dolbyprologic ground
dpl l in	Dolbyprologic Left in
dpl l out	Dolbyprologic Left out
dpl r in	Dolbyprologic Right in
dpl r out	Dolbyprologic Right out
dpl s	Dolbyprologic surround
dpl sub	Dolbyprologic subwoofer

F

f1	Filament 1
f2	Filament 2
fmute	Fast mute

G

gnd d	Ground digital
gnd s	Ground signal

H

hp gnd	Headphone ground
hp l	Headphone Left
hp on	Headphone On
hp r	Headphone Right
hst	Heatsink temperature

L

ls c	Loudspeaker Center
ls gnd	Loudspeaker ground
ls l	Loudspeaker Left
ls r	Loudspeaker Right

M

mfd	Mains failure detection

P

p gnd	P50 ground
p p50	Cinema link P50 code

S

ss ce	Source selector chipenable
ss clk	Source selector clock
ss data	Source selector data
sofac scl	Sofac I^{2}C clock
sofac1 sda1	Sofac 1 I^{2}C data1
sofac2 sda2	Sofac 2 I^{2}C data2
surr pre-out	Surround pre-out
s gnd	Surround ground

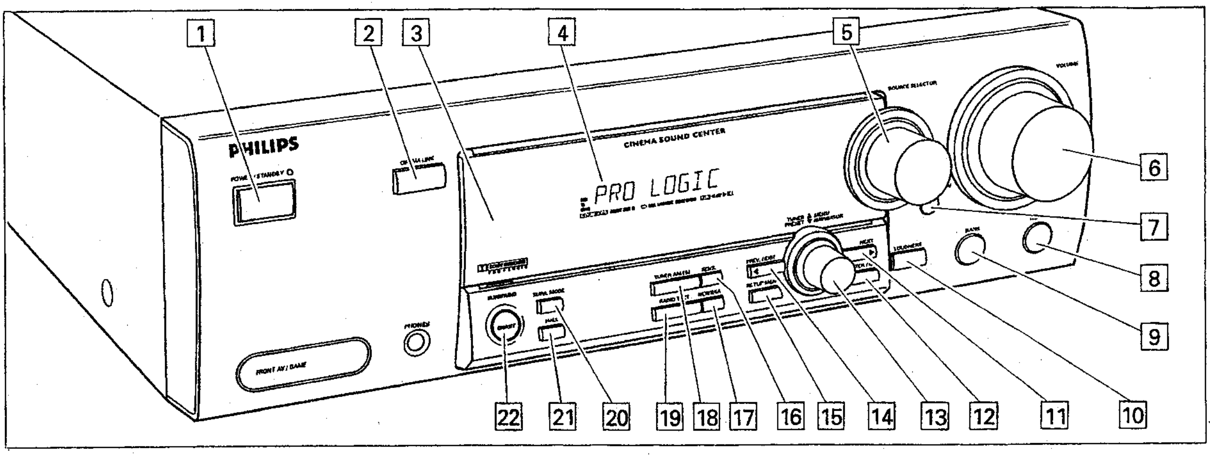
T

tu clk	Tuner clock
tu da	Tuner data
tu en	Tuner enable
tu gnd	Tuner ground
tu l	Tuner Left
tu r	Tuner Right
tu rds	Tuner RDS
tu stereo	Tuner stereo

V

v gnd	Video ground

CONTROLS

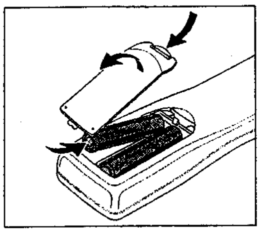


1	**POWER / STANDBY**	Switches the receiver on and off.
2	**CINEMA LINK**	Switches the system control bus between the receiver and the TV on and off.
3		Sensor for the infrared remote control.
4		Display
5	**SOURCE SELECTOR**	Selects the different audio and video connectors.
6	**VOLUME**	Increases and decreases the volume level.
7	**FRONT AV**	Selects the FRONT AV / GAME input (FR 755 only).
8	**TREBLE**	Adjusts the treble when used in combination with VOLUME.
9	**BASS**	Adjusts the bass when used in combination with VOLUME.
10	**LOUDNESS**	Switches LOUDNESS on and off.
11	**NEXT ▶**	TUNER: searches radio stations. MENU: switches to the next menu level.
12	**ENTER / OK**	Confirms selected menu values.
13	**TUNER PRESET ⬍ MENU NAVIGATOR**	TUNER: switches to the next and previous stored radio station. MENU: moves upwards and downwards.
14	**◀ PREV. / EXIT**	TUNER: searches radio stations. MENU: switches to the previous menu level.
15	**SETUP MENU**	Switches the menu on and off.
16	**SENS.**	Switches between low and high tuner sensitivity.
17	**NEWS/TA**	Switches the RDS news and RDS traffic announcement on and off.
18	**TUNER AM/FM**	Switches the wavebands of the tuner.
19	**RADIO TEXT**	Scrolls through the different RDS information.
20	**SURR. MODE**	Switches through the different surround effects.
21	**HALL**	Switches HALL on and off.
22	**SURROUND ON/OFF**	Switches the surround sound on and off.

REMONTE CONTROL

Remote control usage

Open the battery compartment of the remote control and insert 2 alkaline batteries, type **AA** (R06, UM-3).



Remove batteries if they are flat or if the remote control is not going to be used for a long time.

Batteries contain chemical substances, so they should be disposed of properly.

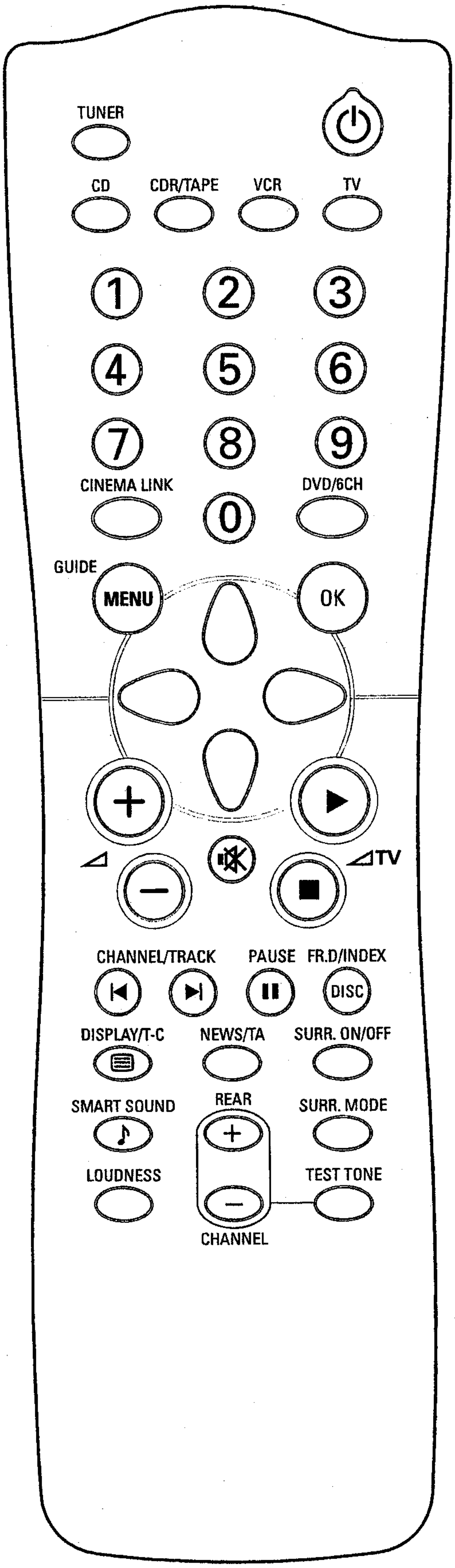
The buttons on the remote control work the same way as the corresponding ones on the receiver.

Additional appliances can only be controlled if they are working with the RC-5 and the RC-6 code system.

Important!

You have to press a source button for longer than 2 seconds to switch the sound source on the receiver. Pressing a source button for less than 2 seconds will only switch the remote control to use the commands for the selected product.

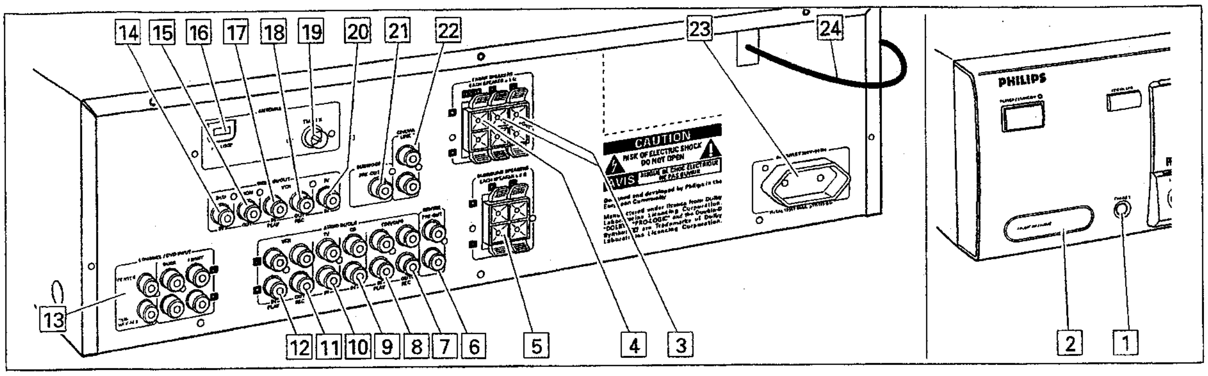
The remote control remains tuned to the selected source until another source button on the remote control is pressed. This enables you to operate additional sources (i. e. winding a tape) without changing the source on the receiver.


TUNER
CD
CDR/TAPE
VCR
TV
1
2
3
4
5
6
7
8
9
CINEMA LINK
0
DVD/6CH
GUIDE
MENU
OK
TV
CHANNEL/TRACK
PAUSE
FR.D/INDEX
DISC
DISPLAY/T-C
NEWS/TA
SURR. ON/OFF
SMART SOUND
REAR
SURR. MODE
LOUDNESS
TEST TONE
CHANNEL

Remote control buttons

⏻	Switches the receiver to standby.
TUNER, CD, CDR/TAPE, TV, VCR, DVD/6CH	Switches the remote control to the commands of the different products. Selects the sources if pressed longer than 2 seconds.
1–0	Keys in numbers for tracks, stations or frequencies. Numbers consisting of two figures must be keyed in within 2 seconds.
CINEMA LINK	Switches the connection between the receiver and the TV on and off.
MENU GUIDE	Switches the menu on and off.
OK	Confirms menu options.
Arrow buttons	**TUNER:** Moves in the menus. Right/left arrows are tuning up/down. **CD, CDR:** Left/right arrows are searching backwards/forwards, up/down arrows are selecting the next/previous track.
+ ⊿	Increases the receiver volume.
– ⊿	Decreases the receiver volume.
🔇	Mutes the sound of the receiver.
▶ ⊿**TV**	Increases the TV volume. **CD, CDR, VCR, DVD:** Starts playback.
■ ⊿**TV**	Decreases the TV volume. **CD, CDR, VCR, DVD:** Stops playback.
⏮ CHANNEL/TRACK	Selects the previous preset tuner station. **VCR:** Rewinds the tape. **CD, CDR, DVD:** Selects the previous track. **TV:** Selects the previous channel.
⏭ CHANNEL/TRACK	Selects the next preset tuner station. **VCR:** Fast forwards the tape. **CD, CDR, DVD:** Selects the next track. **TV:** Selects the next channel.
❚❚ PAUSE	**CD, CDR, VCR, DVD:** Pauses playback.
DISC FR.D./INDEX	**CD-, CDR-, DVD-Changers:** Switches to the next disc. **TUNER:** Switches to FREQUENCY DIRECT. **VCR:** Switches the index search on and off.
▤ DISPLAY/T-C	**TUNER:** Switches between station name, frequency and radio text. **CD, CDR:** Switches between the different time displays. **TV:** Switches teletext on and off. **DVD:** Switches between title and chapter.
NEWS/TA	Switches the functions NEWS and TRAFFIC ANNOUNCEMENT on and off.
SURR. ON/OFF	Switches SURROUND SOUND on and off.
♪ SMART SOUND	Scrolls through the different smart sounds.
+/– REAR	Increases/decreases the volume of the rear speakers. While test tone is on, the volume of the speakers you are hearing can be increased/decreased with these buttons.
SURR. MODE	Scrolls through the different surround modes.
LOUDNESS	Switches LOUDNESS on and off.
TEST TONE	Switches the test tone on and off. While test tone is on, the volume of the speakers you are hearing can be increased/decreased with +/– REAR.

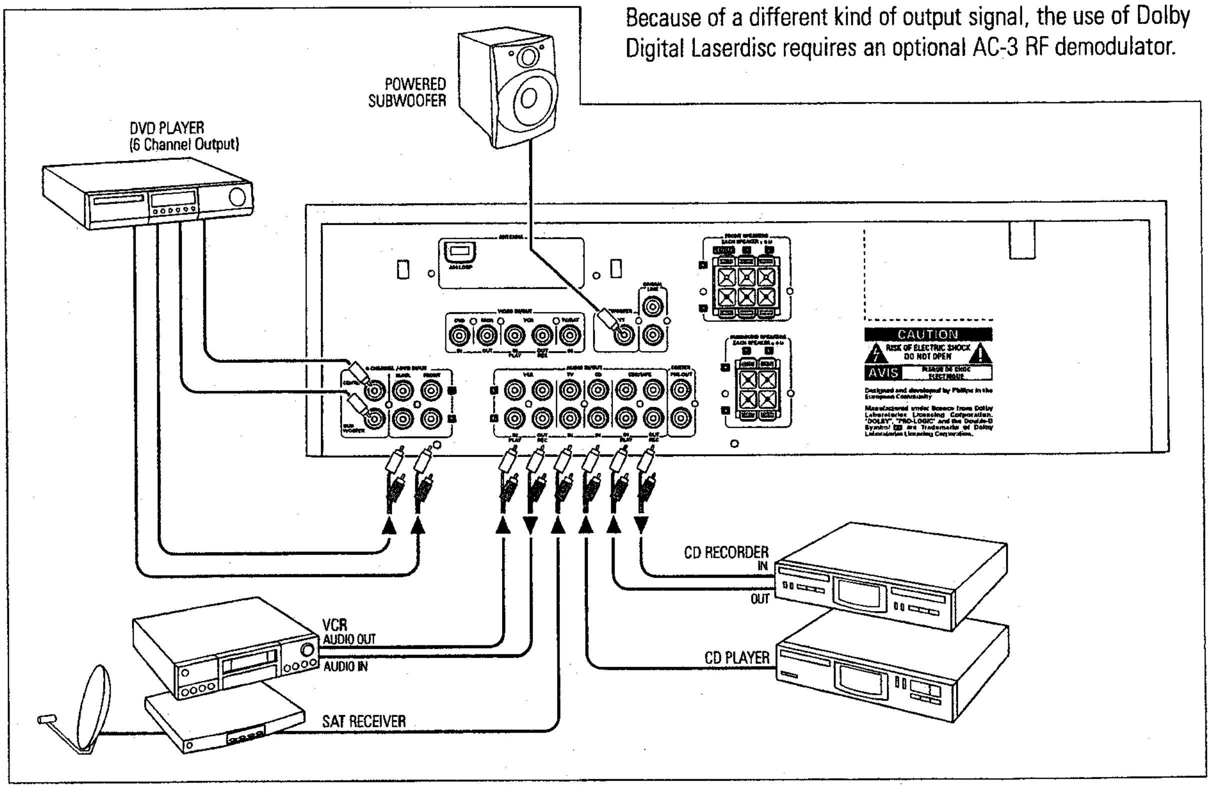
CONNECTORS



Connectors	Connectors name	Connect to:
6.3 mm headphone socket at the front	1 **PHONES**	A headphone with a 6.3 mm plug.
Audio and video inputs at the front (FR 755 only)	2 **FRONT AV / GAME**	Audio and video out sockets of appliances such as video cameras and game consoles.
FRONT SPEAKERS	3 **R, L**	Right and left front speaker.
	4 **CENTER**	Center speaker.
SURROUND SPEAKERS	5 **R, L**	Right and left surround speaker.
AUDIO IN/OUT	7 **CDR/TAPE OUT**	Input of a CD recorder or a tape deck.
	8 **CDR/TAPE IN**	Output of a CD recorder or a tape deck.
	9 **CD IN**	Output of a CD player.
	10 **TV IN**	Output of a TV.
	11 **VCR OUT**	Input of a video recorder.
	12 **VCR IN**	Output of a video recorder.
6-channel input (FR 755 only)	13 **6 CHANNEL/DVD INPUT**	6-channel output of appliances such as DVD or Laserdisc players.
VIDEO IN/OUT (FR 755 only)	14 **DVD IN**	Output of a DVD player.
	15 **MON OUT**	Input of a monitor (e. g. the TV).
	17 **VCR IN**	Output of a video recorder.
	18 **VCR OUT**	Input of a video recorder (for recording).
	20 **TV IN**	Output of a TV.
Antenna connectors	16 **AM LOOP**	Frame antenna supplied.
	19 **FM 75 Ω**	Wire antenna supplied or exterior antenna.
Preamplified outputs	6 **CENTER PRE-OUT**	Input of a TV when it is used as the center speaker (only possible when the CINEMA LINK system bus is connected).
	21 **SURROUND PRE-OUT**	Input of the transmitter of a wireless loudspeaker system (FR 735, MX 735 only).
	21 **SUBWOOFER PRE-OUT**	Input of a powered subwoofer (FR 755 only).
System control bus	22 **CINEMA LINK**	System control bus sockets of a Philips TV with CINEMA LINK.
Mains outlet	23 **AC OUTLET**	Supplies same voltage as mains. Up to 100 W total permitted load.
Mains lead	24	***After all other connections have been made***, connect the mains lead to the wall socket.

Audio connections

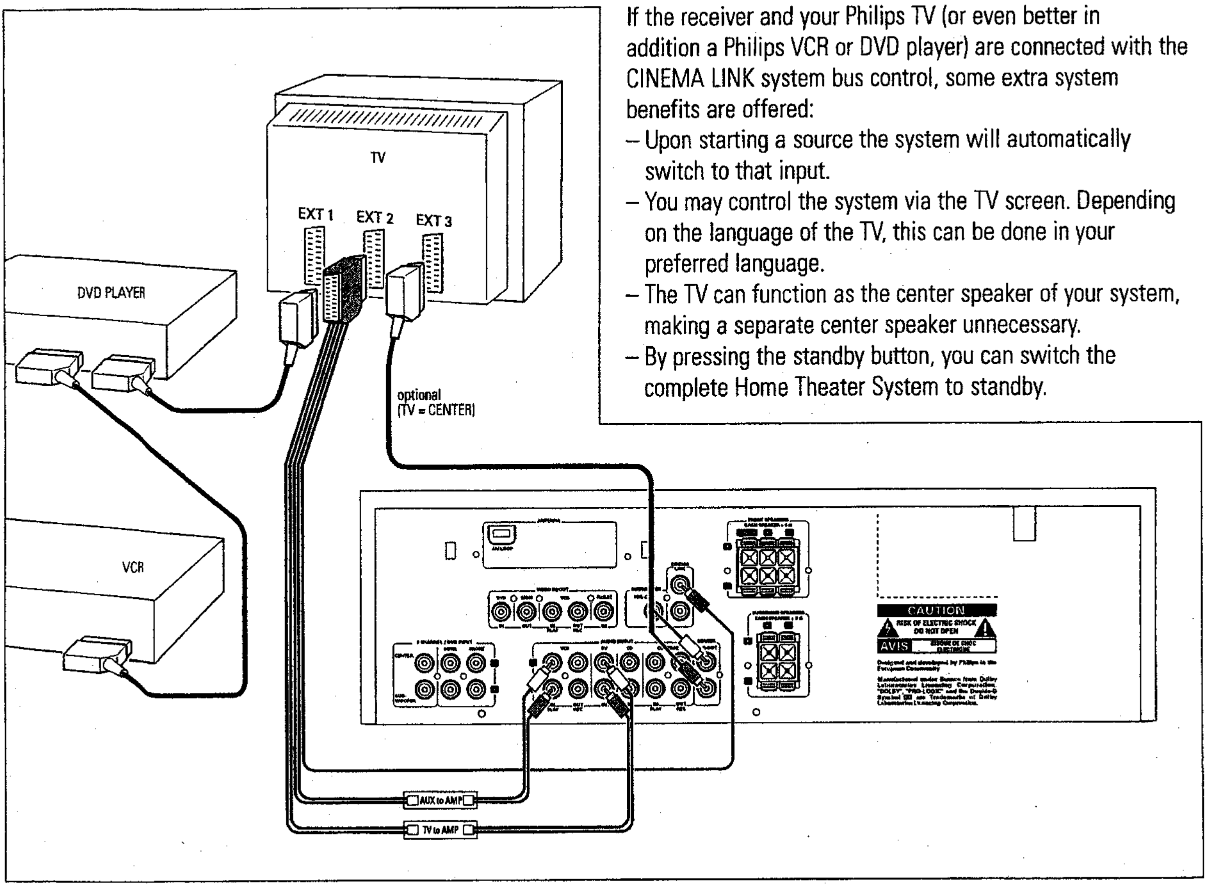
Because of a different kind of output signal, the use of Dolby Digital Laserdisc requires an optional AC-3 RF demodulator.


POWERED
SUBWOOFER
DVD PLAYER
(6 Channel Output)
CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
AVIS
CD RECORDER
IN
OUT
CD PLAYER
VCR
AUDIO OUT
AUDIO IN
SAT RECEIVER

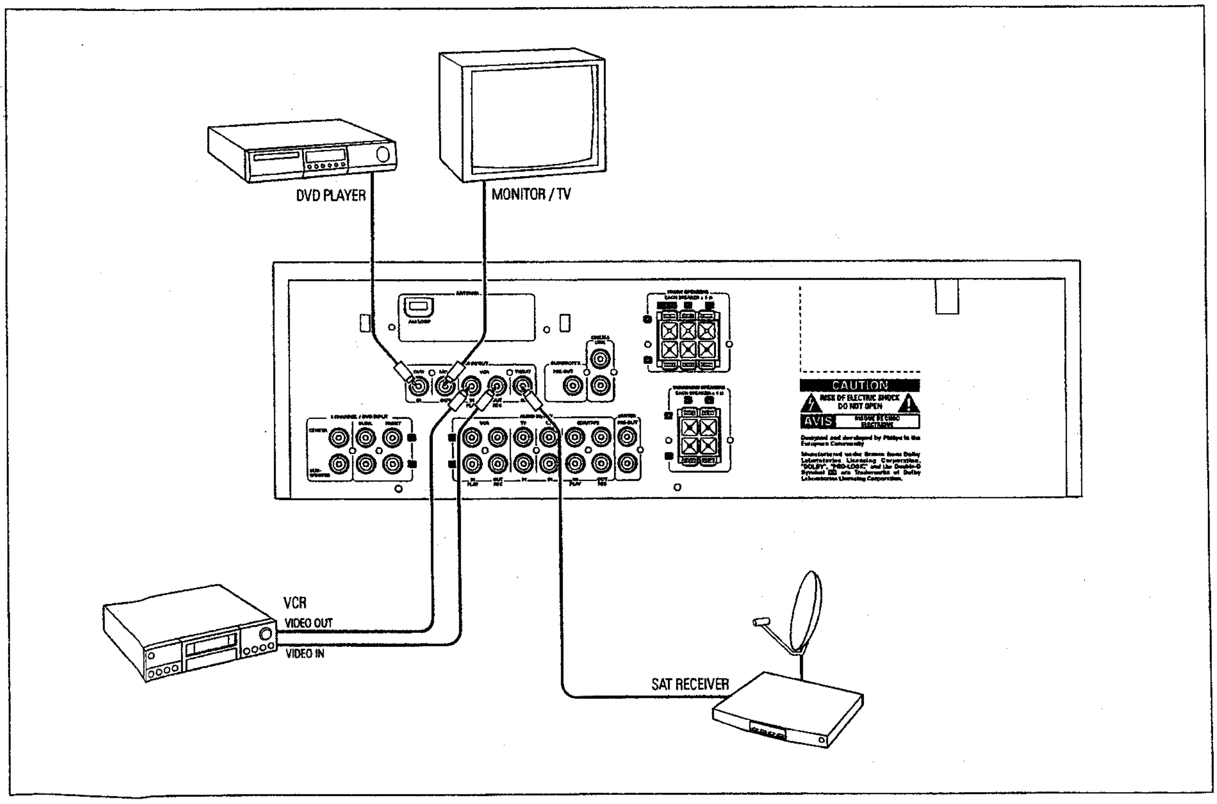
System control bus, CINEMA LINK

If the receiver and your Philips TV (or even better in addition a Philips VCR or DVD player) are connected with the CINEMA LINK system bus control, some extra system benefits are offered:

- Upon starting a source the system will automatically switch to that input.
- You may control the system via the TV screen. Depending on the language of the TV, this can be done in your preferred language.
- The TV can function as the center speaker of your system, making a separate center speaker unnecessary.
- By pressing the standby button, you can switch the complete Home Theater System to standby.


TV
EXT 1
EXT 2
EXT 3
DVD PLAYER
VCR
optional
(TV = CENTER)
AUX to AMP
TV to AMP
CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
AVIS

Video connections (FR 755 only)


DVD PLAYER
MONITOR / TV
VCR
VIDEO OUT
VIDEO IN
SAT RECEIVER
CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
AVIS

Mains

The type plate is located on the rear of the receiver.

1 Check whether the mains voltage as shown on the type plate corresponds to your local mains voltage. If it does not, consult your dealer or service organization.

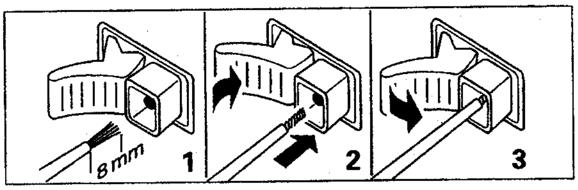
2 Connect the mains cable to the wall socket.

To disconnect the set from the mains completely, remove the mains plug from the wall socket.

For users in the U. K.: please follow the instructions on page 2.

Speaker connections

The speaker connections on the receiver are click-fit connectors. Use them as shown below.



1 Always connect the coloured (or marked) wire to the coloured terminal and the black (or unmarked) wire to the black terminal.

2 Connect:
- Left front speaker to L (red and black)
- Right front speaker to R (red and black)
- Center speaker to CENTER (blue and black)
- Left surround speaker to SURROUND L (grey and black)
- Right surround speaker to SURROUND R (grey and black)

TV as the center speaker

You may use your Philips TV with CINEMA LINK as the center speaker. For TVs with a scart connector an additional audio cinch-to-scart cable is needed. For TV's with cinch connectors additional cinch cables are needed. Look into the instruction manual of your TV on how to use it as the center speaker.

Antenna connections

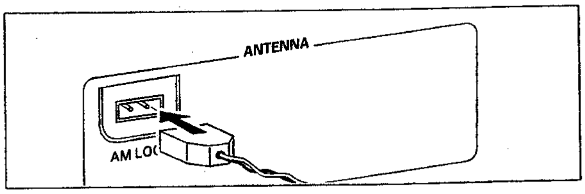
AM (MW) antenna

The loop antenna supplied is for indoor use only. Position the antenna as far away as possible from the receiver, the TV, the cables, a DVD player, a VCR and other radiation sources.

1 Fit the plug of the frame antenna to AM LOOP as shown below.

2 Position the antenna as far away as possible from radiation sources.

3 Turn the antenna for optimum reception.



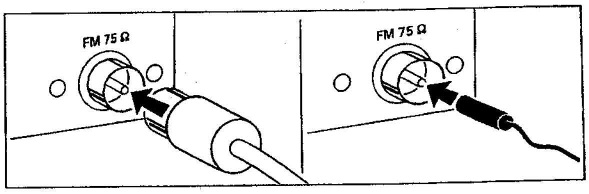
FM antenna

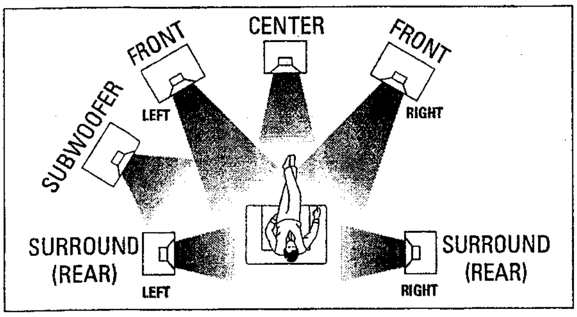
The wire antenna supplied can only be used to receive nearby stations. For better reception we recommend using a cable antenna system or an outdoor antenna.

1 Fit the supplied wire antenna to FM 75 Ω as shown below.

2 Move the antenna in different positions for optimum reception.

- If you are using a cable antenna system or an outdoor antenna, fit the antenna plug to FM 75 Ω instead of the wire antenna.





Positioning of the speakers

General hints for positioning
Avoid positioning the speakers in a corner or on the floor as this will boost the bass tones too much. Placing the speakers behind curtains, furniture, etc. will reduce the treble response. The listener should always be able to "see" the speakers.

Each room has different acoustic characteristics and the positioning possibilities are often limited. You can find the best position for your speakers by referring to the picture above.

As a minimum we recommend 5 speakers (2 front, a center, 2 surround) for good surround sound. It is possible to reproduce some kind of surround sound with fewer speakers. This is done by redirecting the signals which are foreseen for the missing speakers to the existing ones. See "Menus" on how to set up the receiver correctly for the number and size of the speakers used.

Positioning the front speakers
The front speakers should be placed right and left in front of the listening position like usual stereo speakers.

Positioning the center speaker
The center speaker should be placed in the center between the two front speakers, e. g. underneath or on top of the TV. The best height for the center speaker is the height of the listener's ears (while seated).

Positioning the surround speakers
The surround speakers should face each other and be in line with, or slightly behind the listener.

Positioning the subwoofer
A subwoofer can be used to enhance the bass performance of your system dramatically. The subwoofer can be positioned anywhere in the room, because it is not possible to locate the source of deep tones. Nevertheless, you should not place the subwoofer in the middle of a room, since the bass could be severely weakened. Do not place any object on the subwoofer.

Speaker setup and testing

The relative volume of the speakers must be adjusted for optimal surround sound. You should be at your usual listening position when adjusting the speaker volume. See "Receiver menus" on how to set up the receiver for the used speakers.

1 Press POWER / STANDBY to switch on the receiver.

2 Press TEST TONE on the remote control.
→ A test tone coming from the different speakers is heard.

3 Press +/− REAR on the remote control to increase/decrease the volume of the actual speaker.

4 Press TEST TONE on the remote control.
→ The test tone stops.

Note: If you are not completely satisfied with the volume settings, we recommend making minor adjustments to them during surround sound playback.

Power handling

If the receiver is used at very high power, it can produce distortions which may seriously damage your speakers.
If distortions occur, reduce the volume and the tone controls to a level where the sound is acceptable again.

To avoid overheating of the set a safety circuit has been built in. Therefore your set may disconnect under extreme conditions. If this happens, switch the set off and let it cool down before reusing it.

Headphones

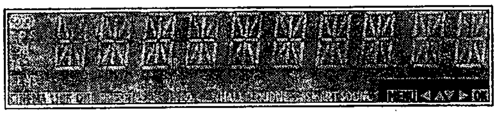
Connecting headphones to PHONES will switch off the speakers. The receiver switches to STEREO and surround sound will be reduced to a stereo signal which is reproducible by standard headphones.

Disconnecting the headphones switches on the speakers again. If you wish to enjoy surround sound again, switch the receiver back to surround sound.

Display

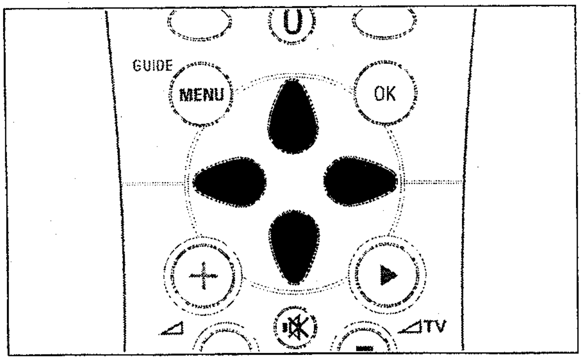
The display of the receiver is divided into 3 sections, which are to be used for the following:

Menu indication

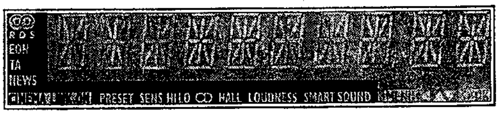


These signs show you if the menu is on or off and indicate in which direction you may move.

MENU	Menu is on.
◀	You may move backwards to the previous menu topic using ◀ PREV. / EXIT ("left" key on the remote control).
▲	You may move up in an option list using ⬍ MENU NAVIGATOR ("up" key on the remote control).
▼	You may move down in an option list using ⬍ MENU NAVIGATOR ("down" key on the remote control).
▶	You may move forward to the next menu topic using NEXT ▶ ("right" key on the remote control).
OK	You may confirm the displayed value.



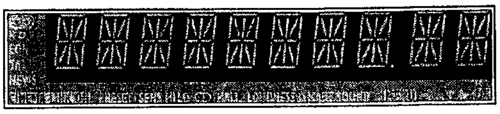
Status lights



Signs showing you various settings and information about the status of the receiver.

PRESET	Tuner is tuned to a preset radio station.
SENS HI	Tuner is switched to high sensitivity.
SENS LO	Tuner is switched to low sensitivity.
CINEMA LINK ON	CINEMA LINK is active.
∞	An FM station is being received in stereo.
SMART SOUND	One of the preset sound settings of the receiver is being used.
RDS	An RDS station is being received.
EON	An RDS station with EON is being received.
HALL	HALL effect is on.
TA	RDS traffic announcement is on.
NEWS	RDS news announcement is on.
LOUDNESS	LOUDNESS is switched on.

Information area



This area is used for feedback of the receiver, tuner frequencies, menu options, values and scrolling text messages.

Receiver menu

The receiver is equipped with a menu system. The menu is used for the setup of the receiver. The different menu options are related to each other in a logical way. Let's assume you have no center speaker connected, and therefore switched CENTER LS to NO. If you try to use VOL CENTER, a message will be scrolled that this is not possible (INSTALL CENTER SPEAKER).

The menu always works the same way. Arrows in the display show you the possible moving directions.

1 Press SETUP MENU.
→**MENU**, and * VOL BAL is displayed.

- **You can exit the menu at any time by pressing SETUP MENU.**

2 Turn ▲▼ MENU NAVIGATOR until the desired option (or a value) is displayed.

3 Press NEXT ▶ to choose the displayed option (or ENTER / OK to confirm a value).

- You can leave any option (values remain unchanged) by pressing ◀ PREV. / EXIT.

Menu structure

* VOL BAL
Adjusts the relative volume balance between the connected speakers.
- TEST TONE
  Test tone: on/off
- VOL FR-L
  Volume front left speaker: –50…+50
- VOL FR-R
  Volume front right speaker: –50…+50
- VOL CENTER
  Volume center speaker: –50…+50
- VOL REAR (FR 735, MX 735 only)
  Volume rear speakers: –50…+50
- VOL REAR-L (FR 755 only)
  Volume rear left speaker: –50…+50
- VOL REAR-R (FR 755 only)
  Volume rear right speaker: –50…+50
- VOL SUBW (FR 755 only)
  Volume subwoofer: –50…+50

* LS SETUP
Selects the used speakers. Chooses the speaker sizes of the used speakers, for optimal sound reproduction.
The distance between the usual listening position and the speakers defines the delay time for the surround sound.

Note: When using the 6 CHANNEL / DVD IN *input, these values cannot be changed (FR 755 only).*

- CENTER LS
  Center speaker present: yes/no
- REAR LS
  Rear speakers present: yes/no
- CENTR SIZE
  Center speaker: small/large
- DIST L/R
  Distance to front speakers: 1…10 m
- DIST REAR
  Distance to rear speakers: 1…10 m

* TUNER
Setup for preset radio stations (see "TUNER" for details).
- AUTO INST
  Stores radio stations automatically
- MAN INST
  Stores radio stations manually
- GIVE NAME
  Allows to assign names to stored radio stations
- RESHUFFLE
  Resorts stored radio stations

TV menu

If the receiver is connected to a Philips CINEMA LINK TV via the CINEMA LINK system control bus sockets (see "CONNECTIONS"), you may use the TV to set up the system. An option called RECEIVER will be added to the TV menu.

If CINEMA LINK is on, adjustments on the receiver will be shown on the TV screen for a few seconds. Consult the instruction booklet of your TV on how to use the TV menu. The options offered may vary by TV model.

Switching the connection

- Press CINEMA LINK to switch the connection between the receiver and the TV either on or off.
  → If the connection is switched on, **CINEMA LINK ON** is displayed.

Note: We recommend switching CINEMA LINK *off during recording. This avoids unwanted interruptions due to switching TV functions.*

If CINEMA LINK is switched on and the TV menu is active, TV MENU is displayed and the menu and sound functions on the receiver are locked.

SOURCE SELECTOR

When selecting a source by turning SOURCE SELECTOR, the audio inputs – and video inputs (FR 755 only) – with the corresponding name are activated. The incoming signal is reproduced by all audio and – if the source includes a video signal – video outputs of the receiver.

Source selected	**Connectors used**
6 CH / DVD	6 CHANNEL / DVD INPUT audio input and DVD IN video input (FR 755 only)
TUNER	The tuner part of the receiver is used, all inputs are switched off.
CD	CD IN audio input
CDR/TAPE	CDR/TAPE IN audio input
TV	TV IN audio input and TV IN video input (FR 755 only)
VCR	VCR IN audio input and VCR IN video input (FR 755 only)

About 6 CHANNEL / DVD IN (FR 755 only)

The 6 CHANNEL / DVD IN can be used to connect a device with a multichannel decoder and 6-channel output connector, i. e. a high end DVD player.

When using the 6 CHANNEL / DVD IN audio input, the reveiver works as a multichannel amplifier. The source reproduces surround sound and sends it to the receiver divided into the necessary channels. Therefore the SURROUND ON/OFF, HALL and SURR. MODE button have no effect since the provided signal is already multichannel.

From a source which is connected to the 6 CHANNEL / DVD IN audio input cannot be recorded.

Playing a source

1 Press POWER / STANDBY to switch on the receiver.

2 Turn SOURCE SELECTOR to select a source.
→The name of the source is displayed.

- You can select the FRONT AV/GAME input by pressing FRONT AV (FR 755 only).

3 Start playback of the source as usual.

Adjusting the sound

- Turn VOLUME to adjust the volume.
  →VOLUME and the volume level between 0 and 50 is displayed.

1 Press BASS or TREBLE.
→BASS or TREBLE and the actual value are displayed briefly. Then TURN VOLUME KNOB TO CHANGE is scrolled.

2 Turn VOLUME to adjust the bass or treble.
→BASS or TREBLE and the actual value are displayed.

Note : If VOLUME *is not turned within 5 seconds or if any other control is used, the bass or treble adjustment is switched off.*

- Press ♪ SMART SOUND on the remote control to scroll through the built-in smart sounds: MOVIE, SPEECH, MUSIC, MULTIMEDIA and PERSONAL. (PERSONAL is the userdefined bass and treble setting.)
  →**SMART SOUND** is displayed and the name of the chosen sound profile is scrolled once if smart sound is on.

- Press LOUDNESS to switch loudness either on or off.
  →**LOUDNESS** is displayed if loudness is on.

Recording from a source

If you wish to record from a source you must select it with SOURCE SELECTOR. The incoming signal is reproduced by all audio and – if the source includes a video signal – video outputs of the receiver. The sound settings do not affect the recording.

1 Turn SOURCE SELECTOR (or press FRONT AV – FR 755 only) to select the source you want to record from.
→The name of the source is displayed.

2 Prepare the desired recording appliance. It must be connected to one of the outputs of the receiver.

3 Start recording on the recording appliance.

4 Start the playback of the source as usual.

Notes: – The audio and video signal of VCR IN *is not reproduced by* VCR OUT. *The same applies to the audio signal of* CDR/TAPE IN to CDR/TAPE OUT.
– From a source which is connected to the 6 CHANNEL / DVD IN *audio input cannot be recorded.*

SURROUND SOUND

About surround sound

Surround sound gives you a complete new listening sensation. You will have the feeling of being in the middle of the action, because sound is coming from everywhere around you. Look out for TV broadcasts, audio and video tapes and discs with the DOLBY SURROUND PRO·LOGIC or DOLBY DIGITAL marks which are encoded for multichannel surround sound.

Notice that DVDs do not always carry full multichannel surround. To be sure that a disc is multichannel encoded consult your dealer.

Most ordinary stereo tapes and discs can be replayed using surround sound settings with good results. If the reproduction is distorted in surround mode, switch to normal stereo mode.

The availabilty of the various surround sound modes described depends on the number of speakers used and the incoming sound information.

Switching surround sound

With surround sound on, you can switch through the different surround modes. Note that the possibilities are related to speaker setup defined in the receivers menu.

1 Press SURROUND ON/OFF to switch on the surround sound.
   →The surround mode in use is scrolled.

2 Press SURR. MODE repeatedly to listen to the different surround modes (if available).
   →The surround mode in use is scrolled.

3 Press HALL to switch hall either on or off.
   →**HALL** is displayed if hall is on.

4 Press SURROUND ON/OFF to switch off the surround sound.
   →SURROUND OFF is scrolled.

Note: Switching surround sound has no effect when using the 6 CHANNEL / DVD IN *input.*

Surround sound settings

HALL
The sound reproduction is enhanced and a slight echo is added. This gives the impression of being in a large room.

SURROUND (PRO LOGIC)
The surround mode enables normal surround sound reproduction with 4 or 5 speakers.

FRONT-3 STEREO (PRO LOGIC)
The surround sound is muted. 3 Stereo lets you listen to surround sound without using the surround speakers.

STEREO
All sound is reproduced and played through the front left and right speakers. This enables standard stereo reproduction.

Tuning to radio stations

You can search for radio stations by scanning the frequency band. You can also key in the frequency of a known radio station. If an FM station is being broadcast and received in stereo, ∞ is shown.

Searching for radio stations

1 Turn SOURCE SELECTOR to select the tuner.
→TUNER is displayed.

2 Select a waveband by pressing TUNER AM/FM repeatedly.
→The selected waveband is displayed.

3 Keep ◀ or ▶ pressed for approximately 1 second.
→SEARCH is displayed and the tuner tunes to a station with sufficient strength.

4 Repeat this procedure until you find the desired station.

- To fine tune to a weak transmitter, briefly press ◀ or ▶ as often as necessary for optimum reception.

Tuning to a radio station by frequency (with the remote control only)

1 Press TUNER.
→TUNER is displayed.

2 Press TUNER again to select a different waveband.
→The selected waveband is displayed.

3 Press FR. D..
→_ is displayed.

4 Use 1–0 to key in the frequency of a radio station.

Note: Only valid numbers within the frequency range of the tuner can be keyed in.

Switching FM sensitivity

You can switch the tuner to a lower search sensitivity, to search for stations with a strong signal only (FM only).

1 Turn SOURCE SELECTOR to select the tuner.
→TUNER is displayed.

2 Press SENS. on the receiver.
→Either **SENS HI** or **SENS LO** is displayed for 5 seconds.

Note: While searching for radio stations, the actual sensitivity is displayed. In this case, **SENS LO** *means the tuner is only looking for radio stations with a strong signal.*

Storing radio stations

You may store up to 30 radio stations in the memory. The receiver can select and program radio stations by itself or you can choose them yourself.

Automatic programming

1 Choose ✱ TUNER from the menu and press NEXT ▶.

2 Choose AUTO INST and press NEXT ▶.
→The preset number where programming will start, the waveband and AUTO are displayed.

3 Turn TUNER PRESET ⬍ to change the preset number where programming should start.

4 Use TUNER AM/FM to switch to the desired waveband.

5 Press ENTER / OK to start programming.
→AUTO INST flashes and all available radio stations are programmed, this may take a few minutes. Programming is done when AUTO INST stops flashing.

Manual programming

1 Choose ✱ TUNER from the menu and press NEXT ▶.

2 Choose MAN INST and press NEXT ▶.
→A preset number, the waveband and the frequency are displayed.

3 Turn TUNER PRESET ⬍ to change to the preset number where the radio station should be stored.

4 Tune to the desired radio station (see "Searching for radio stations").

5 Press ENTER / OK to confirm your selection.
→STORED is displayed briefly. The radio station is programmed at the chosen preset number.

6 Select and store all desired radio stations this way.

Tuning to stored radio stations

1 Turn SOURCE SELECTOR to TUNER to select the tuner.
→TUNER is displayed.

2 Turn TUNER PRESET ♦ to select a preset radio station.
→**PRESET**, the preset number and station are displayed.

Resorting stored radio stations

After programming radio stations, you might want to change their sequence. RESHUFFLE allows you to exchange the positions of presets.

1 Choose ✱ TUNER from the menu and press NEXT ▶.

2 Choose RESHUFFLE and press NEXT ▶.
→**PRESET**, a preset number and station are displayed.

3 Turn TUNER PRESET ♦ to select a preset station.

4 Press ENTER / OK to confirm the selection.
→The selected preset number (-) and a second preset number are displayed.

5 Turn TUNER PRESET ♦ to select the other preset station.

6 Press ENTER / OK to confirm the exchange.
→RESHUFFLED is displayed briefly and these two preset numbers are swapped.

Naming radio stations

It is possible to assign a name to any of the preset radio stations. RDS station names also can be overwritten.

1 Choose ✱ TUNER from the menu and press NEXT ▶.

2 Choose GIVE NAME and press NEXT ▶.
→A preset radio station is displayed.

3 Turn TUNER PRESET ♦ to select the preset to be renamed.

4 Press ENTER / OK to confirm your selection.
→The existing name or _ _ _ _ _ _ _ _ is displayed.

5 Turn TUNER PRESET ♦ to select a letter and NEXT ▶ or ◀ PREV. to move to the next or previous position.

6 After you have entered the entire name, press ENTER / OK to confirm.
→STORED is displayed and the name is stored.

Note: If you want to use the transmitted RDS station name again, simply clear the given name.

Clearing station names

1 Use the menu option ✱ TUNER, choose GIVE NAME.
→A preset radio station is displayed.

2 Turn ♦ MENU NAVIGATOR to select the name to be cleared.

3 Press ENTER / OK to confirm your selection.

4 Press ◀ PREV. while the first letter is flashing.
→ CL is flashing to the left of the station name.

5 Press ENTER / OK to clear the station name.
Or, if you have changed your mind,
press ◀ PREV. to leave the station name as it is.

RDS

Radio **D**ata **S**ystem is a service that allows FM stations to send additional information. If you are receiving an RDS station, RDS and the station name are displayed.

Switching through different RDS information

- Press RADIO TEXT on the receiver repeatedly to switch through the following information (if available):
  - – Radio text messages
  - – RDS clock
  - – Frequency
  - – Station name

Note: The time signal broadcasted from certain radio stations may not always be accurate.

RDS News and Traffic Announcement

It is possible to set up the tuner in such a way that any playback is interrupted by news or traffic information of a chosen RDS station. Announcement functions only work if the necessary RDS signals are being broadcast.

If RDS stations are also carrying an EON signal (**E**nhanced **O**ther **N**etworks), **EON** is displayed. This signal enables the tuner to search not only the chosen RDS station, but the whole EON station network for news and traffic information.

1 Tune to the desired RDS station.

2 Press NEWS/TA:
Once to display **NEWS**, this switches on the news announcement function.
Twice to display **TA**, this switches on the traffic announcement function.
Three times to display **TA** and **NEWS**, this switches on both announcement functions.

3 Select and play any other source as usual.
→ While news or traffic information is being broadcast the receiver will switch to tuner and **NEWS** or **TA** will flash.

4 Press NEWS/TA until the display indication disappears to switch off the function(s).
or
Press NEWS/TA during an announcement to switch off the function(s).

Note: Be sure to switch the news and traffic announcement off during recording, otherwise these announcements will also be recorded.

Receiver

Subject to modification without notice.

General

Power consumption (FR 735, MX 735)	≈ 150 W
Power consumption (FR 755)	≈ 195 W
Standby power consumption	< 2 W
Dimensions, w × h × d	435 × 135 × 350 mm
Weight (FR 735, MX 735)	8.6 kg
Weight (FR 755)	9.4 kg

Amplifier part (0.7 % THD, 6 Ω, 1 kHz)

Output power, stereo mode (FR 735, MX 735) (DIN)	2 × 50 W
Output power, surround mode (FR 735, MX 735)	
Front	2 × 50 W
Center	50 W
Surround	50 W
Output power, stereo mode (FR 755) (DIN)	2 × 100 W
Output power, surround mode (FR 755)	
Front	2 × 100 W
Center	100 W
Surround	2 × 50 W
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10 kHz
Loudness	+6 dB at 100 Hz (-30 dB); +3 dB at 10 kHz (-30 dB)
Total harmonic distortion	0.05 % at 1 kHz, 1 W
Frequency response	20–20,000 Hz, ±3 dB
S/N ratio	≥ 82 dB
Stereo separation (1 kHz)	≥ 45 dB
Crosstalk (1 kHz)	≤ -65 dB

Inputs

Linear inputs	250 mV at 47 kΩ
6 CH (FR 755 only)	250 mV at 47 kΩ
Front AV (FR 755 only)	250 mV at 22 kΩ

Outputs

Power supply AC outlet (switched)	totally max. 100 W
Linear outputs	250 mV at 1 kΩ
Subwoofer pre-out (FR 755 only)	0.8 V at 1 kΩ
Surround pre-out (FR 735, MX 735 only)	0.8 V at 1 kΩ
Center pre-out	0.8 V at 1 kΩ
Headphones	8–600 Ω (3 V e.m.f., 120 Ω)
Speakers	≥ 6 Ω
Surround speakers (FR 735 only)	≥ 3 Ω

Tuner part

Wave range	
FM	87.5–108.0 MHz
MW	531–1,602 kHz
LW	153–279 kHz
Sensitivity	
Stereo FM	41 dBf
Mono FM	15 dBf
Total harmonic distortion	
Stereo FM	0.3 %
Mono FM	0.85 %
Frequency response	63–12,500 Hz ±1 dB
S/N ratio	
Stereo FM	55 dB
Mono FM	60 dB
Channel separation	35 dB at 1 kHz

Speakers (supplied with MX 735 only)

Subject to modification without notice.

Front speakers

Impedance	6 Ω
Frequency range	40–20,000 Hz
Power handling capacity	50 W
Power handling capacity – peak	100 W
Sensitivity	89 dB
Drivers	1 × 5¼" woofers, 1 × 2" tweeter
Passive radiator	1 × 6½" woofer
Crossover frequencies	4,000 Hz
Dimensions, h × w × d	421 × 219 × 191 mm
Weight	approx. 2.5 kg

Rear speakers

Impedance	3 Ω
Frequency range	100–20,000 Hz
Power handling capacity	25 W
Power handling capacity – peak	50 W
Sensitivity	89 dB
Drivers	1 × 4" full range
Passive radiator	1 × 6½" woofer
Crossover frequencies	4,500 Hz
Dimensions, h × w × d	179 × 181 × 92 mm
Weight	approx. 0.7 kg each

Center speaker

Impedance	6 Ω
Frequency range	75–20,000 Hz
Power handling capacity	50 W
Power handling capacity – peak	100 W
Sensitivity	89 dB
Drivers	2 × 4" woofers, 1 × 2" tweeter
Crossover frequencies	4,500 Hz
Dimensions, h × w × d	131 × 435 × 122 mm
Weight	approx. 1.6 kg

TROUBLESHOOTING

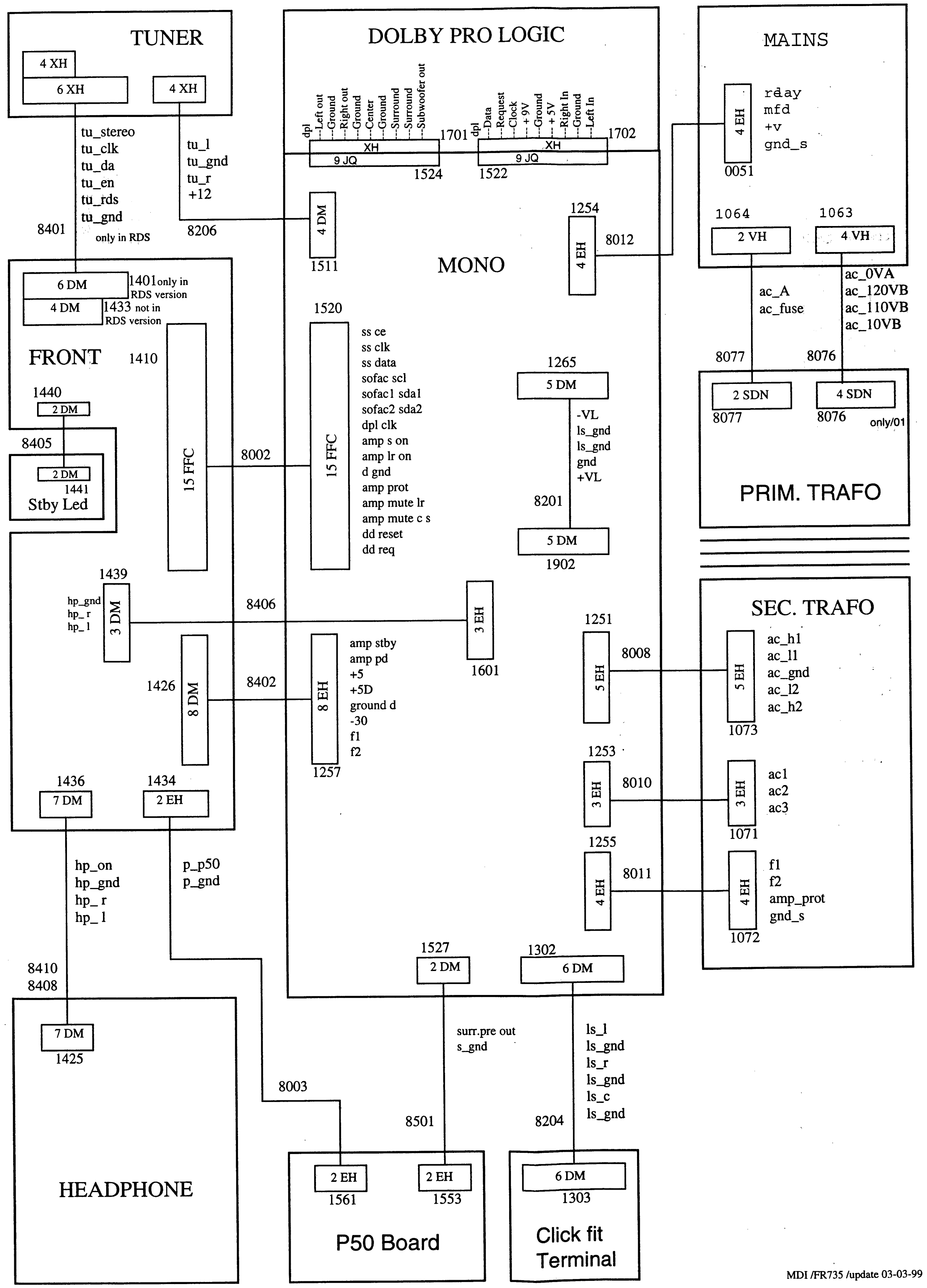
WARNING
Under no circumstances should you try to repair anything by yourself, as this will invalidate the guarantee. Do not open the set as there is a risk of electric shock.

If a fault occurs, first check the points listed below before taking the speakers for repair.

If you are unable to solve a problem by following these hints, consult your dealer or service center.

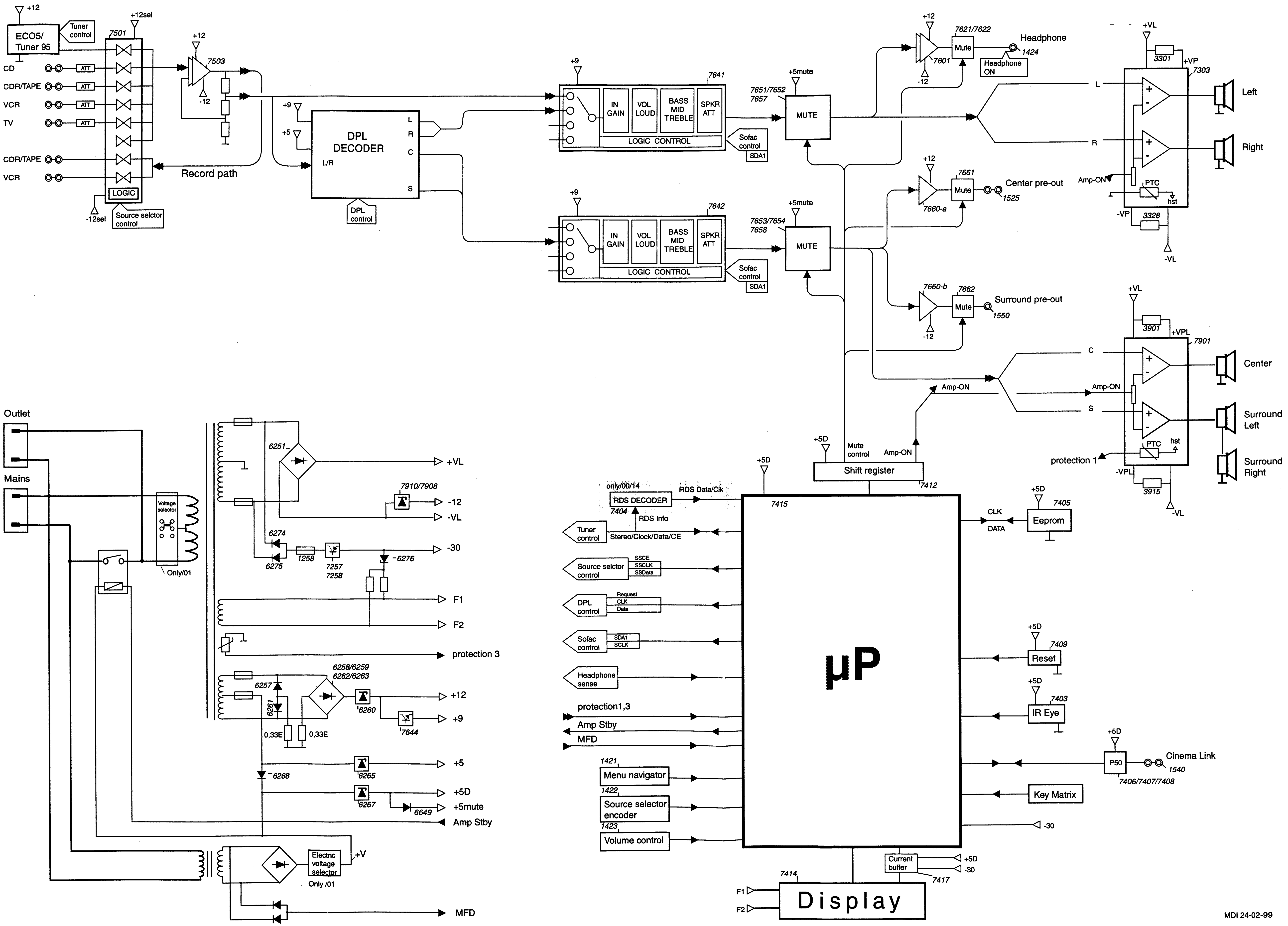
PROBLEM	POSSIBLE CAUSE	SOLUTION
No sound	VOLUME is not correctly adjusted.	Adjust the VOLUME.
	Headphones are connected.	Disconnect headphones.
	The wrong source is selected.	Turn SOURCE SELECTOR to select the correct source.
No sound on the left or right side	One speaker is wrongly connected.	Connect the speaker properly.
	A speaker cable is damaged.	Replace the cable.
	Volume balance in the receiver menu is wrongly adjusted.	Adjust VOL FR-L and VOL FR-R in the receiver menu.
Poor sound or no sound at the center or surround speakers	SURROUND mode is not switched on.	Press SURROUND ON/OFF to switch on the surround sound.
	Surround and/or center speakers are not (properly) connected.	Connect the speakers properly.
	Surround and/or center speakers are switched off in the LS SETUP menu.	Set speaker present to YES.
	A speaker cable is damaged.	Replace the cable.
Poor bass sound	Speakers are not in phase.	Connect the coloured (or marked) wires to the coloured terminals and the black (or unmarked) wires to the black terminals.
Bad sound	Badly matching setting for the given type of music or sound.	Correct the sound settings on the receiver.
Surround sound level is too low or too high	The level of the surround sound is not properly adjusted.	Adjust the level of the surround sound on the receiver.
Center sound level is too low or too high	The sound level of the center channel is not properly adjusted.	Adjust the level of the center channel on the receiver.
Only center speaker is heard in Dolby Surround Pro Logic	A mono signal is reproduced.	Choose a different sound source or switch off surround sound.
Bad radio reception, automatic programming does not work properly	Receiver or antenna is positioned near a radiation source such as a TV, CD player, CD recorder, DVD player, etc.	Change the position of the interfering unit or try to switch it off.

WIRING DIAGRAM


TUNER
4 XH
6 XH
4 XH
tu_stereo
tu_clk
tu_da
tu_en
tu_rds
tu_gnd
only in RDS
tu_l
tu_gnd
tu_r
+12
8401
8206
DOLBY PRO LOGIC
dpl
Left out
Ground
Right out
Ground
Center
Ground
Surround
Surround
Subwoofer out
XH
9 JQ
1701
1524
dpl
Data
Request
Clock
+ 9V
Ground
+ 5V
Right In
Ground
Left In
XH
9 JQ
1702
1522
MAINS
4 EH
rday
mfd
+v
gnd_s
0051
1064
2 VH
1063
4 VH
ac_A
ac_fuse
ac_0VA
ac_120VB
ac_110VB
ac_10VB
8077
8076
2 SDN
4 SDN
8077
8076
only/01
PRIM. TRAFO
4 DM
1511
MONO
1254
4 EH
8012
FRONT
6 DM
1401 only in RDS version
4 DM
1433 not in RDS version
1410
15 FFC
1440
2 DM
8405
2 DM
1441
Stby Led
8002
1520
15 FFC
ss ce
ss clk
ss data
sofac scl
sofac1 sda1
sofac2 sda2
dpl clk
amp s on
amp lr on
d gnd
amp prot
amp mute lr
amp mute c s
dd reset
dd req
1265
5 DM
-VL
ls_gnd
ls_gnd
gnd
+VL
8201
5 DM
1902
1439
hp_gnd
hp_ r
hp_ l
3 DM
8406
3 EH
1601
1426
8 DM
8402
8 EH
amp stby
amp pd
+5
+5D
ground d
-30
f1
f2
1257
1251
5 EH
8008
SEC. TRAFO
5 EH
ac_h1
ac_l1
ac_gnd
ac_l2
ac_h2
1073
1253
3 EH
8010
3 EH
ac1
ac2
ac3
1071
1255
4 EH
8011
4 EH
f1
f2
amp_prot
gnd_s
1072
1436
7 DM
1434
2 EH
hp_on
hp_gnd
hp_ r
hp_ l
p_p50
p_gnd
8410
8408
7 DM
1425
HEADPHONE
8003
1527
2 DM
1302
6 DM
surr.pre out
s_gnd
ls_l
ls_gnd
ls_r
ls_gnd
ls_c
ls_gnd
8501
8204
2 EH
1561
2 EH
1553
P50 Board
6 DM
1303
Click fit Terminal

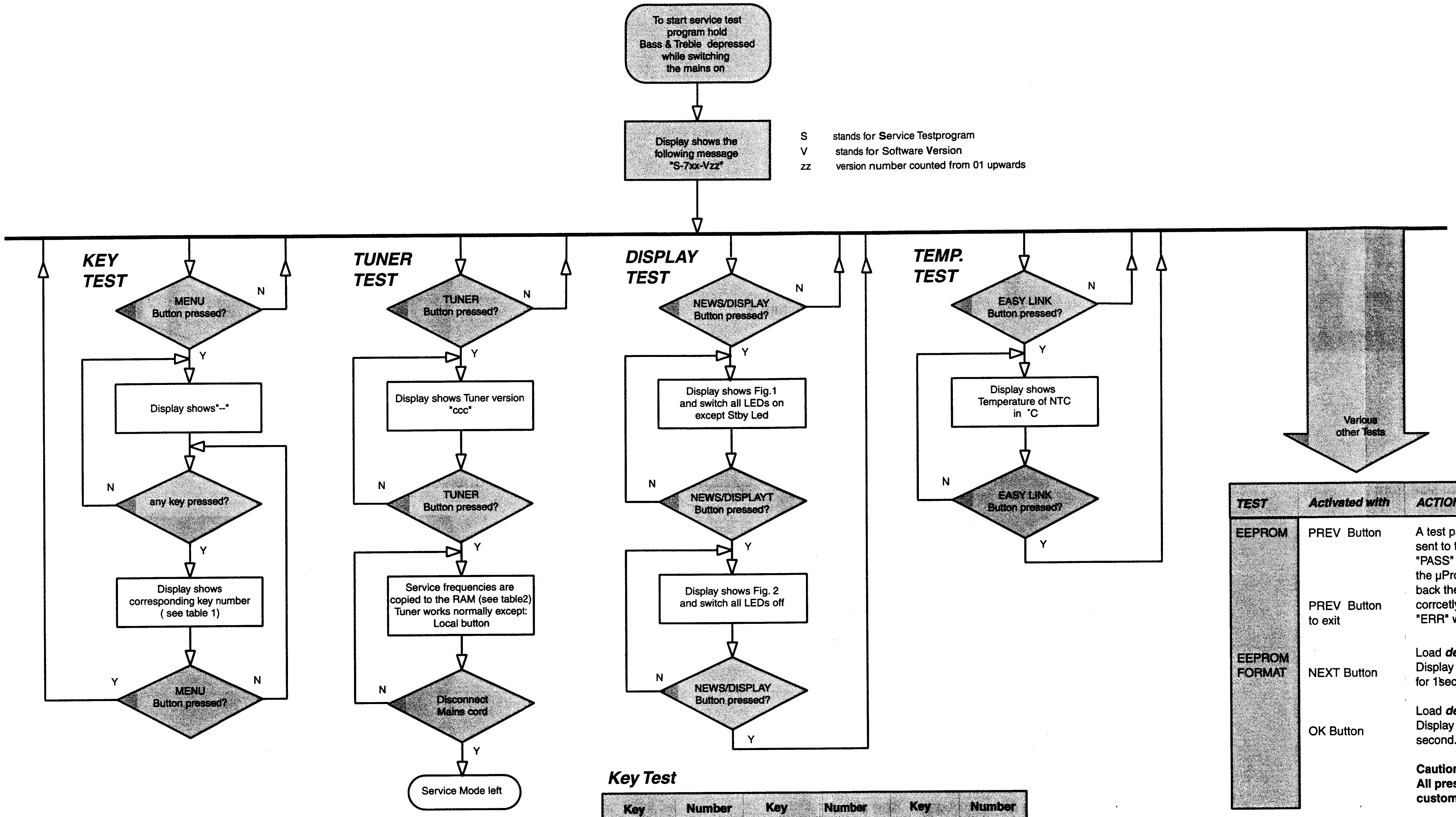
MDI /FR735 /update 03-03-99

BLOCKDIAGRAM


+12
ECO5/
Tuner 95
Tuner control
+12sel
7501
CD
CDR/TAPE
VCR
TV
CDR/TAPE
VCR
ATT
LOGIC
-12sel
Source selctor control
+12
7503
-12
Record path
+9
+5
DPL
DECODER
L/R
L
R
C
S
DPL control
+9
7641
IN GAIN
VOL LOUD
BASS MID TREBLE
SPKR ATT
LOGIC CONTROL
Sofac control
SDA1
+9
7642
+5mute
7651/7652
7657
MUTE
+5mute
7653/7654
7658
MUTE
+12
7621/7622
7601
-12
Mute
Headphone
1424
Headphone ON
+12
7661
7660-a
Mute
Center pre-out
1525
7660-b
7662
Mute
Surround pre-out
1550
-12
+VL
3301
+VP
7303
L
R
Left
Right
Amp-ON
PTC
hst
-VP
3328
-VL
+VL
3901
+VPL
7901
C
Center
Amp-ON
Amp-ON
S
Surround Left
Surround Right
protection 1
-VPL
3915
-VL
+5D
Mute control
Amp-ON
Shift register
7412
+5D
7415
only/00/14
RDS DECODER
7404
RDS Data/Clk
RDS Info
Tuner control
Stereo/Clock/Data/CE
Source selctor control
SSCE
SSCLK
SSData
DPL control
Request
CLK
Data
Sofac control
SDA1
SCLK
Headphone sense
protection1,3
Amp Stby
MFD
1421
Menu navigator
1422
Source selector encoder
1423
Volume control
µP
+5D
7405
CLK
DATA
Eeprom
+5D
7409
Reset
+5D
7403
IR Eye
+5D
P50
Cinema Link
1540
7406/7407/7408
Key Matrix
-30
Current buffer
+5D
-30
7417
7414
F1
F2
Display
Outlet
Mains
Voltage selector
Only/01
6251
+VL
7910/7908
-12
-VL
6274
6275
1258
7257
7258
6276
-30
F1
F2
protection 3
6258/6259
6262/6263
6257
6261
6260
+12
7644
+9
0,33E
0,33E
6268
6265
+5
6267
+5D
6649
+5mute
Amp Stby
Electric voltage selector
Only /01
+V
MFD

MDI 24-02-99

SERVICE TEST PROGRAM


To start service test program hold Bass & Treble depressed while switching the mains on
Display shows the following message "S-7xx-Vzz"
KEY TEST
MENU Button pressed?
N
Y
Display shows"--"
N
any key pressed?
Y
Display shows corresponding key number (see table 1)
Y
MENU Button pressed?
N
TUNER TEST
TUNER Button pressed?
N
Y
Display shows Tuner version "ccc"
N
TUNER Button pressed?
Y
Service frequencies are copied to the RAM (see table2) Tuner works normally except: Local button
N
Disconnect Mains cord
Y
Service Mode left
DISPLAY TEST
NEWS/DISPLAY Button pressed?
N
Y
Display shows Fig.1 and switch all LEDs on except Stby Led
N
NEWS/DISPLAYT Button pressed?
Y
Display shows Fig. 2 and switch all LEDs off
N
NEWS/DISPLAY Button pressed?
Y
TEMP. TEST
EASY LINK Button pressed?
N
Y
Display shows Temperature of NTC in °C
N
EASY LINK Button pressed?
Y
Various other Tests

S stands for Service Testprogram
V stands for Software Version
zz version number counted from 01 upwards

TEST	Activated with	ACTION
EEPROM	PREV Button PREV Button to exit	A test pattern will be sent to the Eeprom. "PASS" is displayed if the µProcessor read back the test pattern corrcetly, otherwise "ERR" will be displayed.
EEPROM FORMAT	NEXT Button	Load **default data.** Display shows "NEW SUBW" for 1second.
	OK Button	Load **default data.** Display shows"NEW" for 1 second. **Caution!** **All presets from the customer will be Lost**

Key Test

Key	Number	Key	Number	Key	Number
Cinema	1	Sens	7	Loudness	13
Surr. on/off	2	*News T/A	8	Bass	14
Surr. Mode	3	Prev.Exit	9	Treble	15
Hall	4	SetupMenu	10	#Front AV	16
Tuner	5	Next	11		
*Radio Text	6	Enter/OK	12		

*Button Radio Text chang in Name/Frequency in /01/17 version
Button News T/A chang in Display in /01 version
Only in FR755/00/14

Table 1

Tuner Test

Display info Version	Europe "EUR" /00	East Eur. 3-band "EEL" /14	East Eur. 2-band "EEU" /14	USA "USA" /17	Oversea "OSE" /01
Preset 1	87.5MHz	65.81MHz	65.81MHz	87.5MHz	87.5MHz
2	108MHz	108MHz	108MHz	108MHz	108MHz
3	531kHz	74MHz	74MHz	530kHz	531kHz
4	1602kHz	87.5MHz	87.5MHz	1700kHz	1602kHz
5	558kHz	531kHz	531kHz	560kHz	558kHz
6	1494kHz	1602kHz	1602kHz	1500kHz	1494kHz
7	153kHz	558kHz	558kHz	98MHz	----
8	279kHz	1494kHz	1494kHz	----	----
9	198kHz	153kHz	98MHz	----	----
10	98MHz	279kHz	70.01MHz	----	----
11	----	198kHz	----	----	98MHz

Table 2

This table is valid for all types of tuners.
Custormer presets will not changed after this Tuner test.
If a station is tuned then the display flag "OK" will be ON otherwise it will be OFF.
If the tuned frequency is carrying RDS information, the display flag "RDS" will be ON.
Oversea version: the tuning grid can be switched between 9kHz and 10kHz by pressing the key "TUNER" for longer then 2 seconds. "Grid 9" or "Grid10" will be shown accordingly.
Grid 9kHz is in FM 50kHz , Grid 10kHz is in FM 100kHz
Europe version: the LW can be switched On and Off by pressing the key "TUNER" for longer than 2 seconds. LW OFF or LW ON will be shown accordingly.

Default Data

Source =Tuner---Mode=stereo---Volume=10
SubwooferVol=0---Left Volume=0---Center Volume=0
Righ Volume=0---RearL Volume=0---RearR Volume=0
Bass=0---Treble=0---Loudness=Off---Smart Sound=Personal
Center Present=Yes---Rear Present=Yes
Center Size=Small---Rear Size=Small
Front Dist = 4 meter---Rear Dist = 2 meter
For /01: AM grid is 9kHz
FM grid is 50kHz

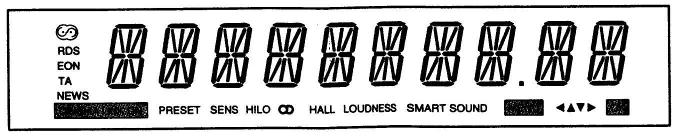

RDS
EON
TA
NEWS
PRESET
SENS
HILO
HALL
LOUDNESS
SMART SOUND

Figure 1

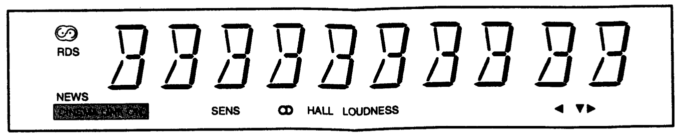
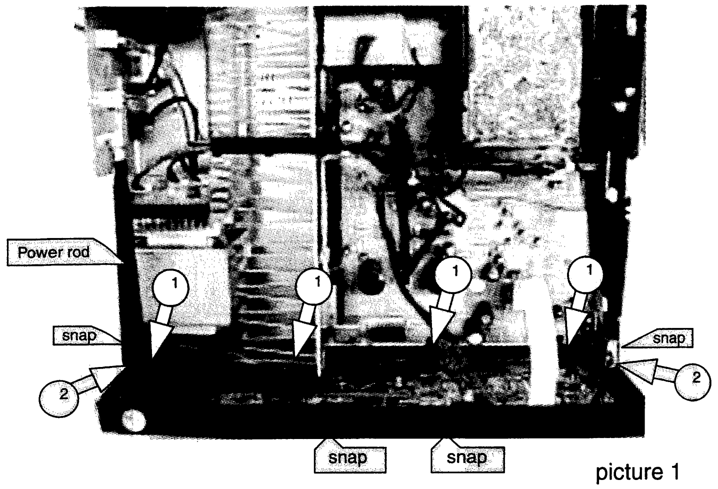

RDS
NEWS
SENS
HALL
LOUDNESS

Figure 2

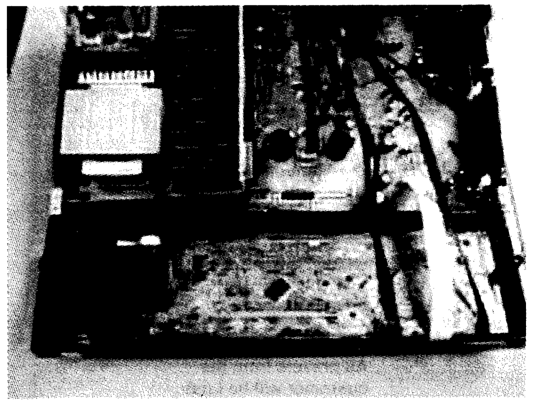
DISMANTLING HINTS

Dismantling of Front



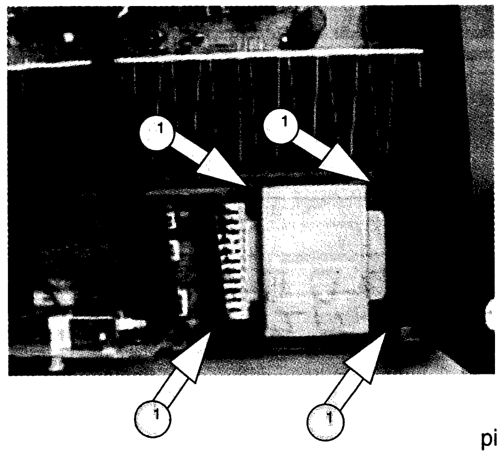
picture 1

1) Remove top cover
2) Remove power rod
3) Remove 6 x screw as shown in picture 1
4) Release two snaps (left & right side front)
5) Release two snaps on the bottom side front
6) Tipp down front as shown in picture 2



picture 2

Dismantling of mainstrafo

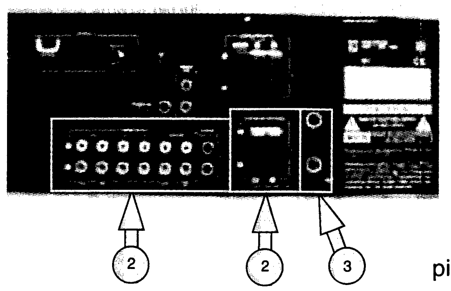


picture 8

1) Remove power rod
2) Remove 4x screw as shown in picture 8

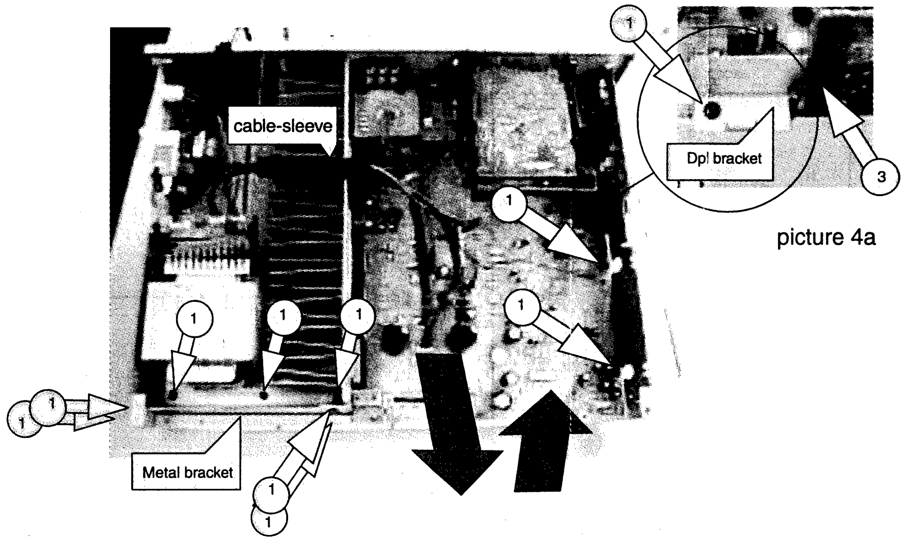
Dismantling of mono board

1) Remove front . See picture 1
2) Remove whole front (disconnect the wires on the mono board coming from front)



picture 3

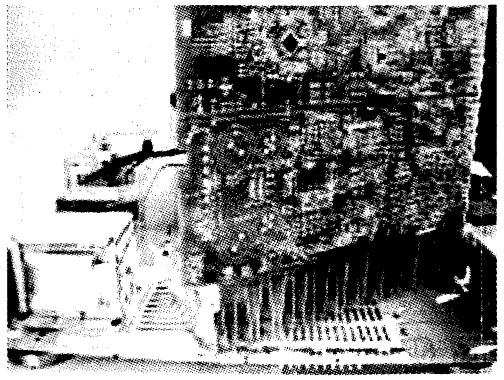
3) Remove 8 x screws shown in mentionned aria . See picture 3



picture 4a

picture 4

4) Remove DPL bracket. See picture 4a
5) Remove wires out the cable-sleeve.
4) Remove 7 x screw and remove metal bracket
5) Remove 2 x screw on mono board . See pictue 4
6) Remove mono board as shown arrow 1 & 2 . See picture 4
7) Bring the mono board in the service position as shown in picture 5



picture 5

Legend

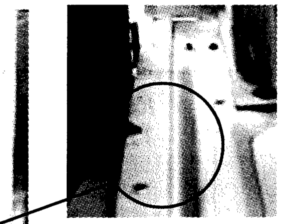
① ⇨ = Torx M3x6mm (screw with big head)

② ⇨ = Torx 3x10mm

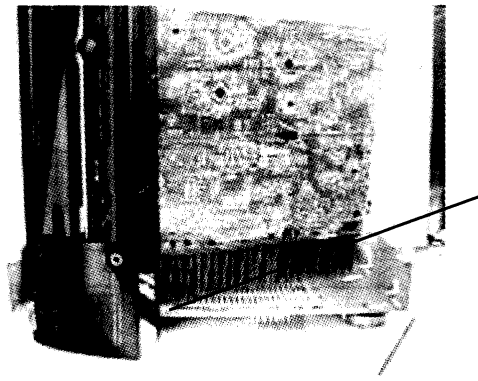
③ ⇨ = Torx M3x6mm

Service position monoboard

1) Bring front in position as shown in picture 6
2) Snap nok of front in bottom to make front stable . See picture 7
3) Connect front wiring back to monoboard.
*The tuner module doesn't have to be connected. Use an other source (pe.CD)

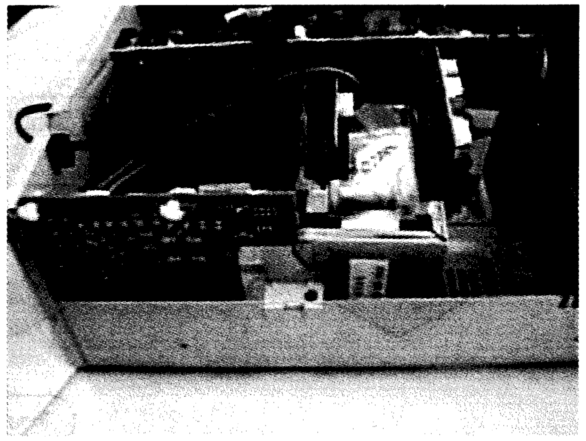


picture 7



picture 6

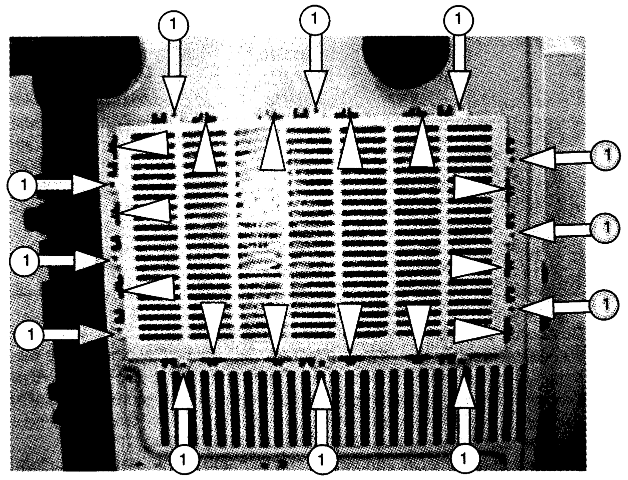
Service position main trafo



1) Put main trafo as shown in picture 9

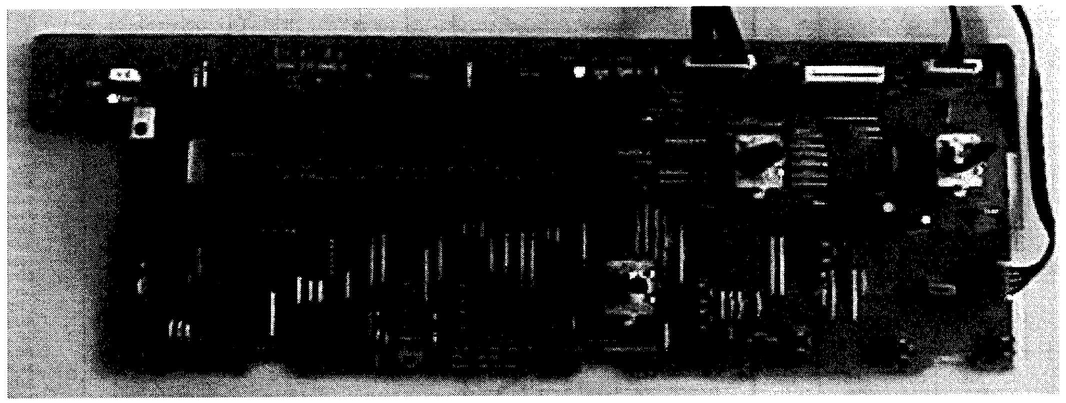
picture 9

Handling service cover



picture 10

1) To open the service cover cut 14 x lugs between cover and bottem . See picture 10 (▽)
2) To close the service cover put 12 x screw in mentionned holes. See picture 10
Service codenumber 12x Torx M3x6mm screw with big head = 4822 502 14659

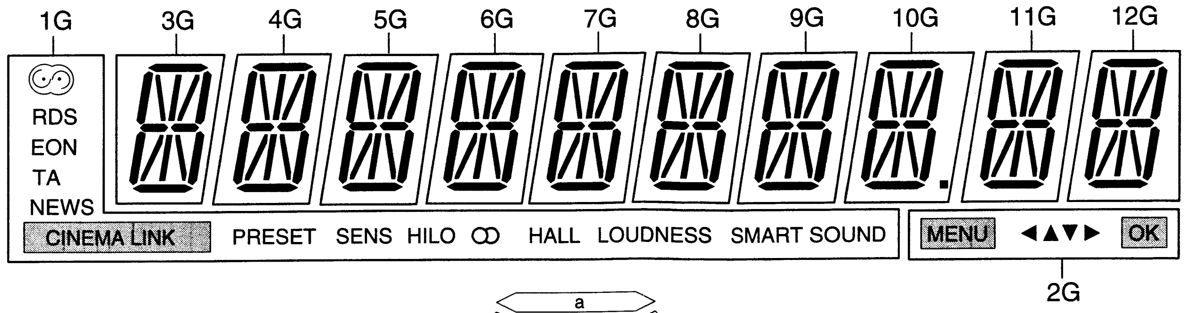


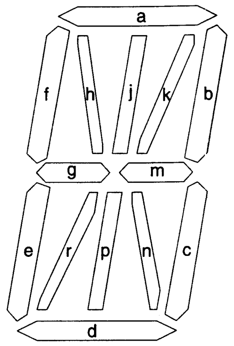
FRONT BOARD

TABLE OF CONTENTS

FTD Display pin connections.................................. 6-2
Headphone & Led board layout 6-3
Circuit diagram 6-4
Component layout 6-5
Partslist 6-6

FTD DISPLAY PIN CONNECTIONS


1G
3G
4G
5G
6G
7G
8G
9G
10G
11G
12G
RDS
EON
TA
NEWS
CINEMA LINK
PRESET
SENS
HILO
HALL
LOUDNESS
SMART SOUND
MENU
◄▲▼►
OK
2G


a
f
h
j
k
b
g
m
e
r
p
n
c
d

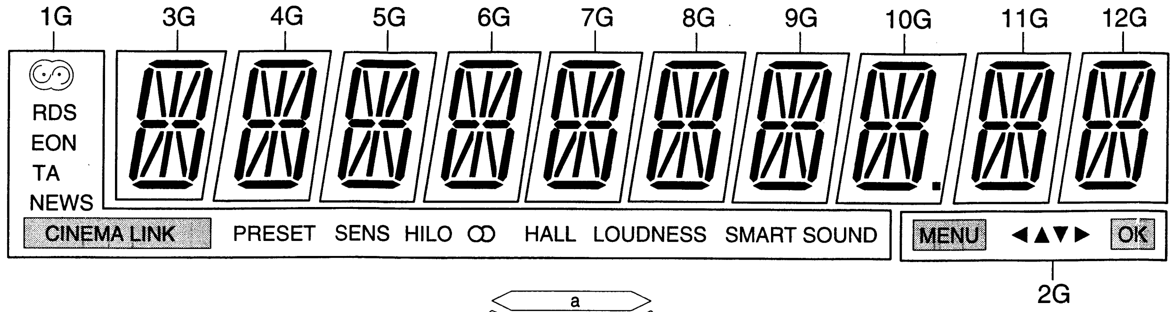
	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G
P1	LOUDNESS	▼	a	a	a	a	a	a	a	a	a	a
P2	-	MENU	j p	j p	j p	j p	j p	j p	j p	j p	j p	j p
P3	-	►	h	h	h	h	h	h	h	h	h	h
P4	LO	OK	k	k	k	k	k	k	k	k	k	k
P5	CINEMA LINK	◄	b	b	b	b	b	b	b	b	b	b
P6	EON	▲	f	f	f	f	f	f	f	f	f	f
P7	HALL	-	m	m	m	m	m	m	m	m	m	m
P8	HI	-	g	g	g	g	g	g	g	g	g	g
P9	NEWS	-	c	c	c	c	c	c	c	c	c	c
P10	PRESET	-	e	e	e	e	e	e	e	e	e	e
P11	RDS	-	r	r	r	r	r	r	r	r	r	r
P12	SMART SOUND	-	n	n	n	n	n	n	n	n	n	n
P13	ꝏ	-	d	d	d	d	d	d	d	d	d	d
P14	TA	-	-	-	-	-	-	-	-	■	-	-
P15	SENS	-	-	-	-	-	-	-	-	-	-	-

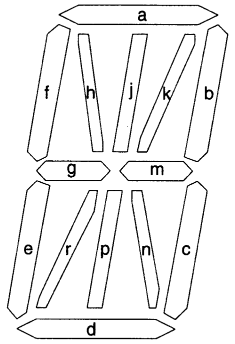
Pin Connection

Pin numbers	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Connection	F2	F2	NP	NP	NC	NC	NC	NC	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	NC	NC	NC	NC	NC	NC	P15	P14	P13	P12	P11	P10	P9	P8	P7	P6	P5	P4	P3	P2	P1	NP	NP	F1	F1

Note: NC -------------- No connection
NP -------------- No pin
Fl , F2 ---------- Filament
1G ~ 12G ------ Grid

FTD DISPLAY PIN CONNECTIONS


1G
3G
4G
5G
6G
7G
8G
9G
10G
11G
12G
RDS
EON
TA
NEWS
CINEMA LINK
PRESET
SENS
HILO
HALL
LOUDNESS
SMART SOUND
MENU
OK
2G


a
f
h
j
k
b
g
m
e
r
p
n
c
d

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G
P1	LOUDNESS	▼	a	a	a	a	a	a	a	a	a	a
P2	-	MENU	j p	j p	j p	j p	j p	j p	j p	j p	j p	j p
P3	-	▶	h	h	h	h	h	h	h	h	h	h
P4	LO	OK	k	k	k	k	k	k	k	k	k	k
P5	CINEMA LINK	◀	b	b	b	b	b	b	b	b	b	b
P6	EON	▲	f	f	f	f	f	f	f	f	f	f
P7	HALL	-	m	m	m	m	m	m	m	m	m	m
P8	HI	-	g	g	g	g	g	g	g	g	g	g
P9	NEWS	-	c	c	c	c	c	c	c	c	c	c
P10	PRESET	-	e	e	e	e	e	e	e	e	e	e
P11	RDS	-	r	r	r	r	r	r	r	r	r	r
P12	SMART SOUND	-	n	n	n	n	n	n	n	n	n	n
P13	ꝏ	-	d	d	d	d	d	d	d	d	d	d
P14	TA	-	-	-	-	-	-	-	-	■	-	-
P15	SENS	-	-	-	-	-	-	-	-	-	-	-

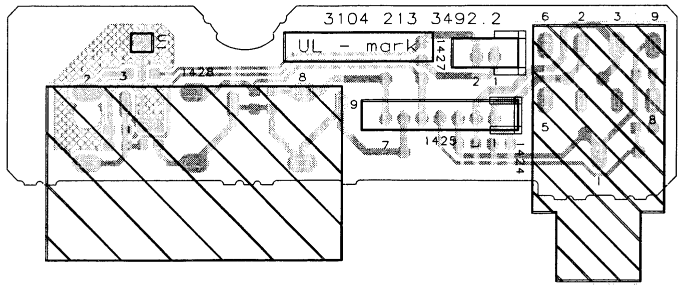
Pin Connection

Pin numbers	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23
Connection	F2	F2	NP	NP	NC	NC	NC	NC	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	NC	NC	NC

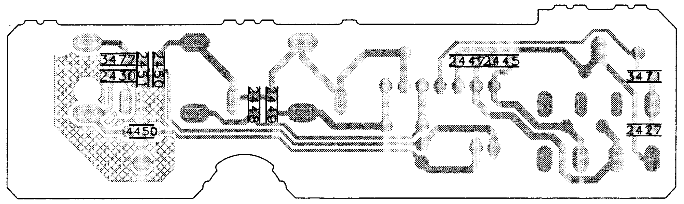
Pin numbers	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Connection	NC	NC	NC	P15	P14	P13	P12	P11	P10	P9	P8	P7	P6	P5	P4	P3	P2	P1	NP	NP	F1	F1

Note: NC -------------- No connection
NP -------------- No pin
FI , F2 ---------- Filament
1G ~ 12G ------ Grid

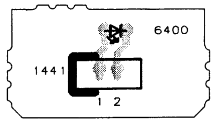
HEADPHONE BOARD - COMPONENT VIEW


3104 213 3492.2
UL - mark
1428
1429
1427
6
2
3
9
8
7
5
1
4

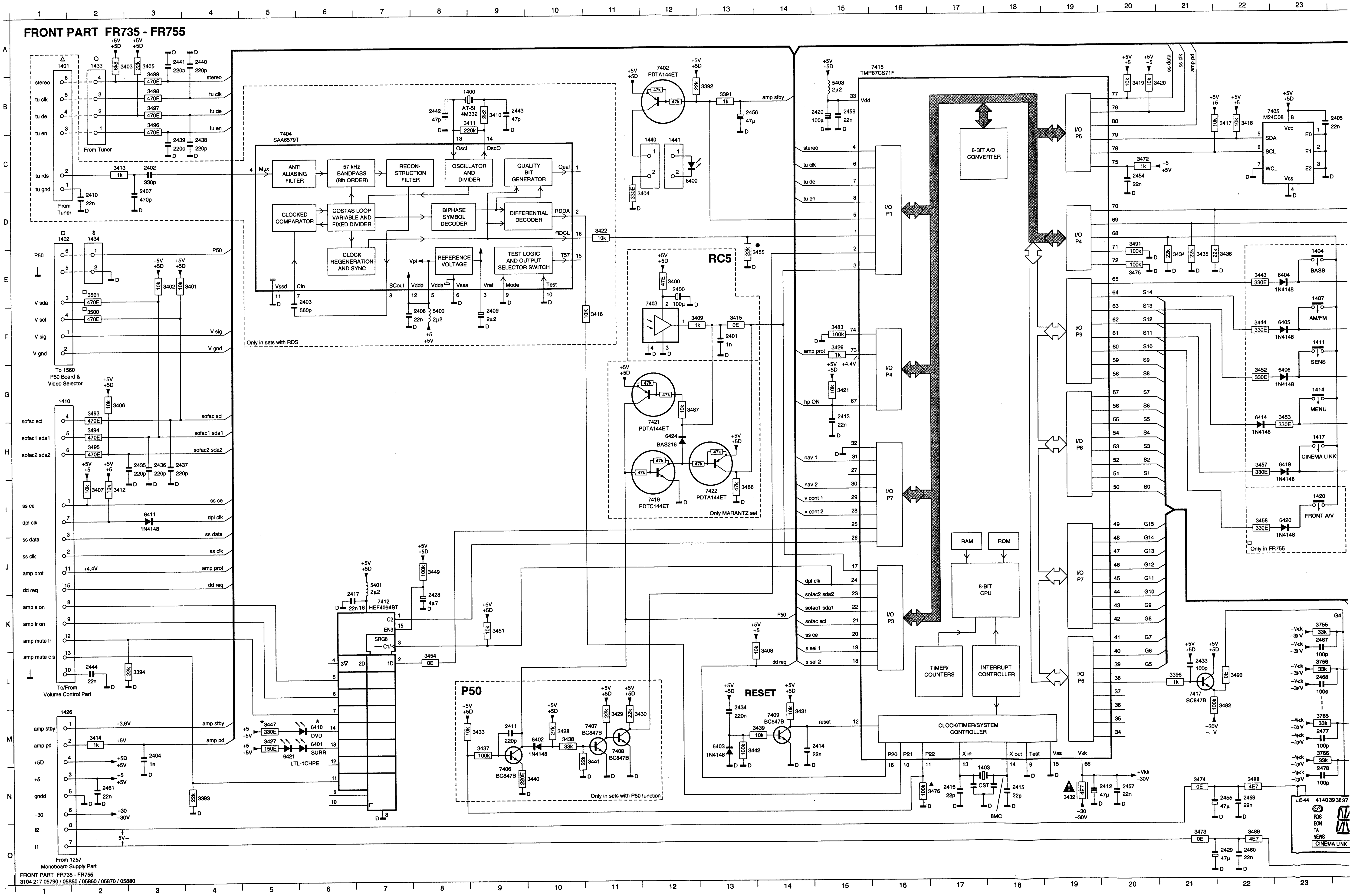
HEADPHONE BOARD - COPPER SIDE VIEW


3477
2430
2441
2445
4450
3471
2427

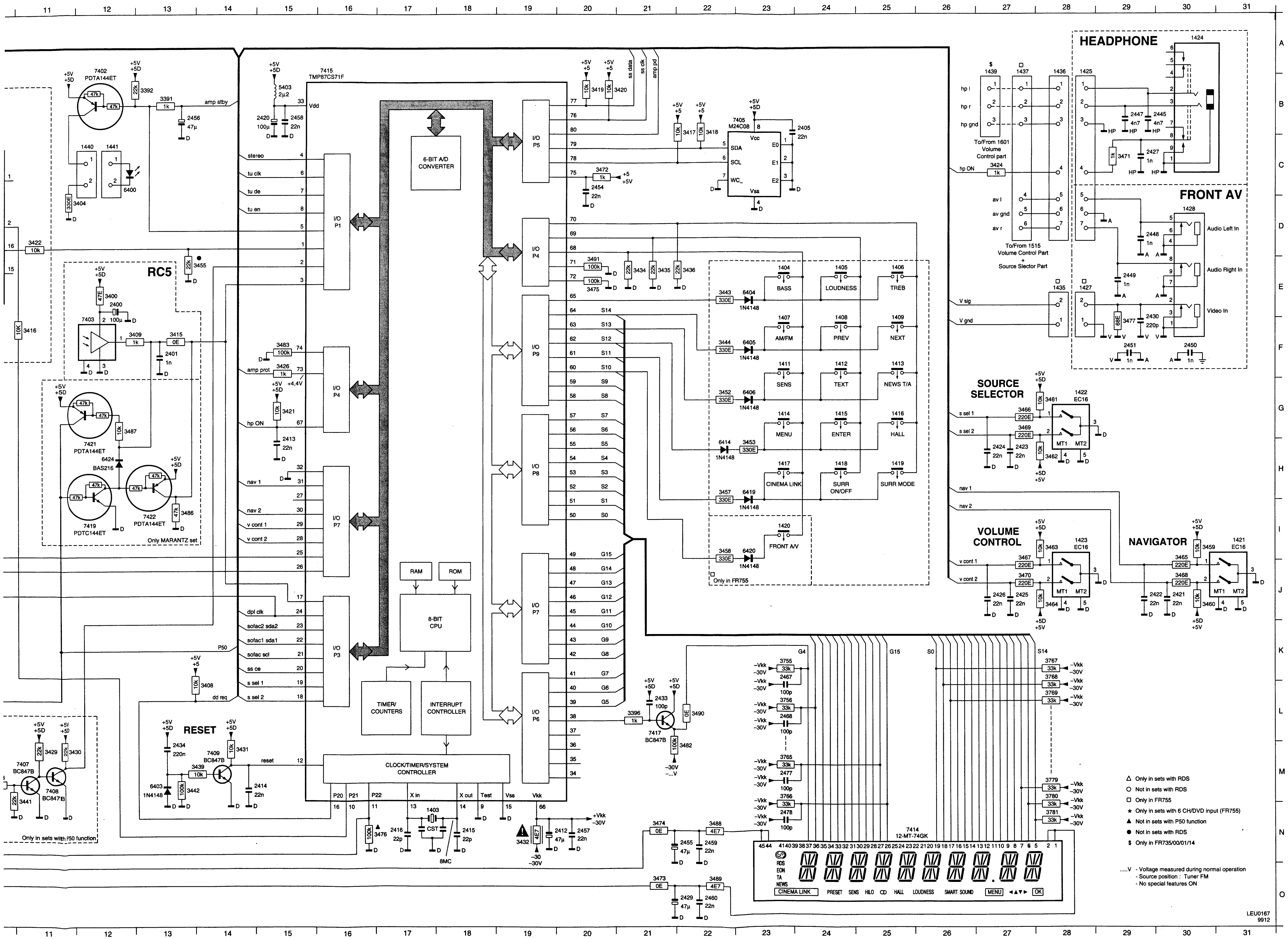
LED BOARD - COMPONENT VIEW


6400
1441
1 2

FRONT PART FR735 - FR755


1401
stereo
tu clk
tu de
tu en
tu rds
tu gnd
From Tuner
1433
From Tuner
7404
SAA6579T
ANTI ALIASING FILTER
57 kHz BANDPASS (8th ORDER)
RECON-STRUCTION FILTER
OSCILLATOR AND DIVIDER
QUALITY BIT GENERATOR
CLOCKED COMPARATOR
COSTAS LOOP VARIABLE AND FIXED DIVIDER
BIPHASE SYMBOL DECODER
DIFFERENTIAL DECODER
CLOCK REGENERATION AND SYNC
REFERENCE VOLTAGE
TEST LOGIC AND OUTPUT SELECTOR SWITCH
Mux
Qual
RDDA
RDCL
T57
Oscl
OscO
Vssd
Cin
SCout
Vddd
Vdda
Vssa
Vref
Mode
Test
1400
AT-51
4M332
Only in sets with RDS
7402
PDTA144ET
amp stby
1440
1441
6400
RC5
7403
7421
PDTA144ET
6424
BAS216
7419
PDTC144ET
7422
PDTA144ET
Only MARANTZ set
1402
1434
P50
V sda
V scl
V sig
V gnd
To 1560
P50 Board & Video Selector
1410
sofac scl
sofac1 sda1
sofac2 sda2
ss ce
dpl clk
ss data
ss clk
amp prot
dd req
amp s on
amp lr on
amp mute lr
amp mute c s
To/From
Volume Control Part
6411
1N4148
1426
amp stby
amp pd
+5D
+5
gndd
-30
f2
f1
From 1257
Monoboard Supply Part
+3,6V
+4,4V
5V~
3447
330E
6410
DVD
3427
150E
6401
SURR
6421
LTL-1CHPE
7412
HEF4094BT
SRG8
C1/
P50
7406
BC847B
6402
1N4148
7407
BC847B
7408
BC847B
Only in sets with P50 function
RESET
7409
BC847B
6403
1N4148
reset
7415
TMP87CS71F
Vdd
6-BIT A/D CONVERTER
I/O P1
I/O P4
I/O P3
I/O P7
I/O P5
I/O P9
I/O P8
I/O P6
RAM
ROM
8-BIT CPU
TIMER/ COUNTERS
INTERRUPT CONTROLLER
CLOCK/TIMER/SYSTEM CONTROLLER
P20
P21
P22
X in
X out
Test
Vss
Vkk
1403
CST
8MC
hp ON
nav 1
nav 2
v cont 1
v cont 2
s sel 1
s sel 2
dd req
7405
M24C08
Vcc
SDA
SCL
WC_
Vss
E0
E1
E2
ss data
ss clk
amp pd
1404
BASS
1407
AM/FM
1411
SENS
1414
MENU
1417
CINEMA LINK
1420
FRONT A/V
Only in FR755
S0
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
G5
G6
G7
G8
G9
G10
G11
G12
G13
G14
G15
G4
7417
BC847B
+Vkk
-30V
RDS
EON
TA
NEWS
CINEMA LINK

FRONT PART FR735 - FR755
3104 217 05790 / 05850 / 05860 / 05870 / 05880


7415
TMP87CS71F
6-BIT A/D CONVERTER
8-BIT CPU
RAM
ROM
TIMER/ COUNTERS
INTERRUPT CONTROLLER
CLOCK/TIMER/SYSTEM CONTROLLER
I/O P1
I/O P4
I/O P7
I/O P3
I/O P5
I/O P9
I/O P8
I/O P6
7405
M24C08
SDA
SCL
WC_
Vcc
Vss
RC5
RESET
HEADPHONE
FRONT AV
SOURCE SELECTOR
VOLUME CONTROL
NAVIGATOR
BASS
LOUDNESS
TREB
AM/FM
PREV
NEXT
SENS
TEXT
NEWS T/A
MENU
ENTER
HALL
CINEMA LINK
SURR ON/OFF
SURR MODE
FRONT A/V
Only in FR755
Only MARANTZ set
Only in sets with P50 function
7414
12-MT-74GK
Audio Left In
Audio Right In
Video In
To/From 1601 Volume Control part
To/From 1515 Volume Control Part + Source Slector Part
stereo
tu clk
tu de
tu en
amp stby
amp prot
hp ON
nav 1
nav 2
v cont 1
v cont 2
dpl clk
sofac2 sda2
sofac1 sda1
sofac scl
ss ce
s sel 1
s sel 2
dd req
reset
ss data
ss clk
amp pd
RDS
EON
TA
NEWS
CINEMA LINK
PRESET
SENS
HILO
HALL
LOUDNESS
SMART SOUND
MENU
OK
LEU0167
9912

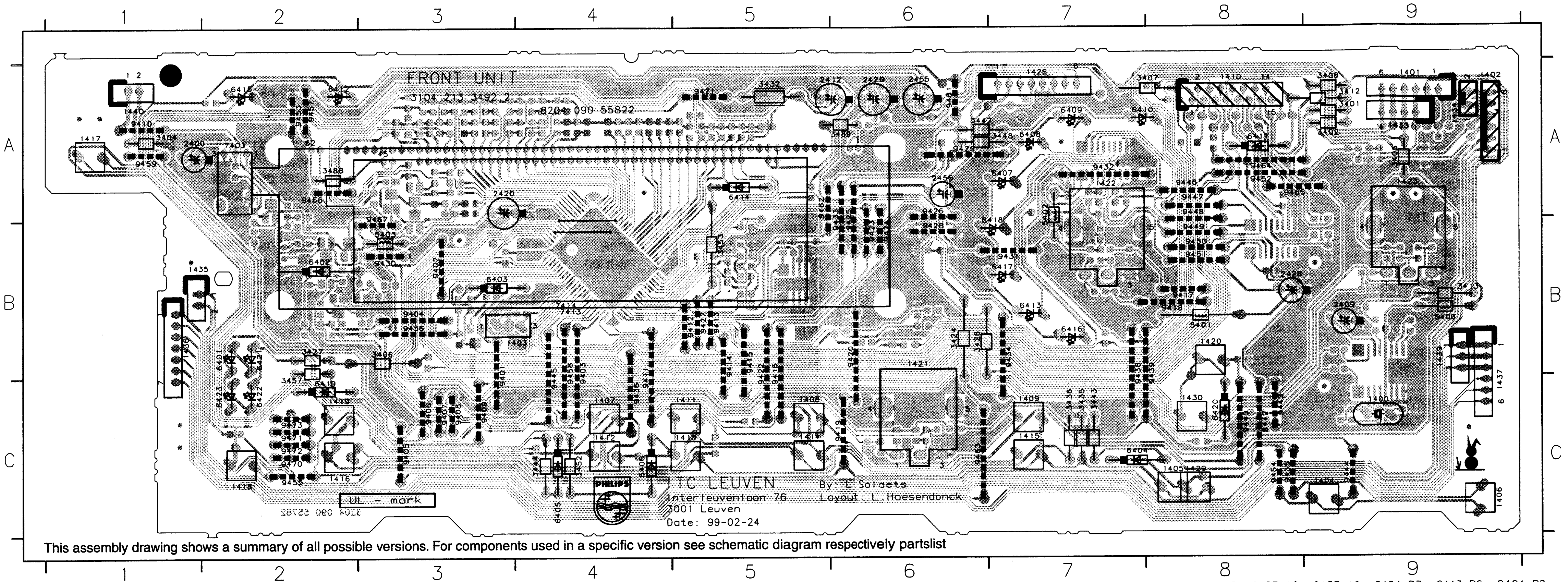
△ Only in sets with RDS
○ Not in sets with RDS
□ Only in FR755
★ Only in sets with 6 CH/DVD input (FR755)
▲ Not in sets with P50 function
● Not in sets with RDS
$ Only in FR735/00/01/14

.....V - Voltage measured during normal operation
- Source position : Tuner FM
- No special features ON

1400	B8	3421	G15
1401	A1	3422	D11
1402	D1	3424	C27
1403	N17	3426	F15
1404	E23	3427	M5
1405	E24	3428	M10
1406	E25	3429	M11
1407	F23	3430	M11
1408	F24	3431	M14
1409	F25	3432	N19
1410	G1	3433	M9
1411	F23	3434	E21
1412	F24	3435	E21
1413	F25	3436	E22
1414	G23	3437	M9
1415	G24	3438	M10
1416	G25	3439	M13
1417	H23	3440	N10
1418	H24	3441	N11
1419	H25	3442	M13
1420	I23	3443	E22
1421	I31	3444	F22
1422	G28	3447	M5
1423	I28	3449	J8
1424	A30	3451	K9
1425	A28	3452	G22
1426	M1	3453	H23
1427	E28	3454	L8
1428	D30	3455	E13
1433	A2	3457	H22
1434	D2	3458	I22
1435	E28	3459	I30
1436	A28	3460	J30
1437	A27	3461	G28
1439	A27	3462	H28
1440	C12	3463	I28
1441	C12	3464	J28
2400	E12	3465	I30
2401	F13	3466	G27
2402	C3	3467	I27
2403	E6	3468	J30
2404	M3	3469	G27
2405	B24	3470	J27
2407	D3	3471	C29
2408	F8	3472	C20
2409	F9	3473	O21
2410	D2	3474	N21
2411	M9	3475	E20
2412	N19	3476	N16
2413	H15	3477	F29
2414	M14	3482	M22
2415	N18	3483	F15
2416	N17	3486	I13
2417	K6	3487	G12
2420	B15	3488	N22
2421	J30	3489	O22
2422	J29	3490	L22
2423	H27	3491	E20
2424	H27	3493	G2
2425	J27	3494	H2
2426	J27	3495	H2
2427	C29	3496	B3
2428	K8	3497	B3
2429	O22	3498	B3
2430	F29	3499	A3
2433	L21	3500	F2
2434	M13	3501	E2
2435	H3	3755	K23
2436	H3	3756	L23
2437	H3	3765	M23
2438	C4	3766	M23
2439	C3	3767	K28
2440	A4	3768	K28
2441	A3	3769	L28
2442	B8	3779	M28
2443	B9	3780	M28
2444	L2	3781	N28
2445	B29	5400	F8
2447	B29	5401	J7
2448	D29	5403	B15
2449	E29	6400	C12
2450	F30	6401	M6
2451	F29	6402	M10
2454	C20	6403	M13
2455	N22	6404	E23
2456	B13	6405	F23
2457	N20	6406	G23
2458	B15	6410	M6
2459	N22	6411	I3
2460	O22	6414	H22
2461	N2	6419	H23
2467	K23	6420	I23
2468	L23	6421	M5
2477	M23	6424	H12
2478	N23	7402	A12
3391	B13	7403	F12
3392	B13	7404	C5
3393	N4	7405	B22
3394	L3	7406	N9
3396	L21	7407	M11
3400	E12	7408	M11
3401	E4	7409	M14
3402	E3	7412	K7
3403	A2	7414	N25
3404	D11	7415	A16
3405	A3	7417	L21
3406	G2	7419	I12
3407	I2	7421	H12
3408	L14	7422	I13
3409	F12		
3410	B9		
3411	B8		
3412	I2		
3413	C2		
3414	M2		
3415	F13		
3416	F11		
3417	B22		
3418	B22		
3419	B20		
3420	B20		

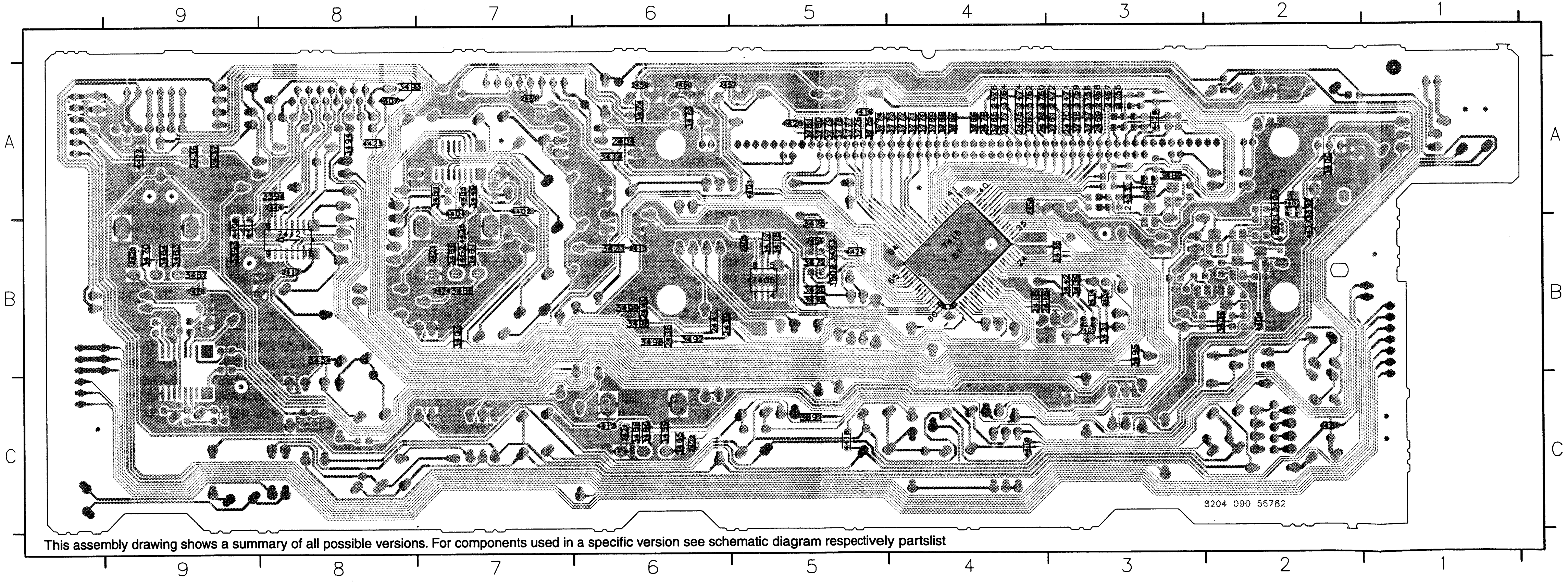
FRONT BOARD - COMPONENT & COPPER SIDE VIEW

1400	C9
1401	A9
1402	A9
1403	B4
1404	C9
1405	C8
1406	C9
1407	C4
1408	C5
1409	C7
1410	A8
1411	C5
1412	C4
1413	C5
1414	C5
1415	C7
1416	C2
1417	A1
1418	C2
1419	C2
1420	B8
1421	B6
1422	A7
1423	A9
1426	A7
1429	C8
1430	C8
1433	A9
1434	A9
1435	B1
1436	B1
1437	C9
1439	B9
1440	A1
2400	A1
2409	B9
2412	A6
2420	A3
2428	B8
2429	A6
2455	A6
2456	A6
3401	A9
3402	A9
3404	A1
3405	A9
3406	B3
3407	A8
3408	A9
3412	A9
3413	B9
3424	B6
3426	B6
3427	B2
3432	A5
3435	C7
3436	C7
3443	C7
3444	C4
3447	A6
3448	A7
3452	C4
3453	B5
3457	C2
3488	A2
3489	A6
5400	B9
5401	B8
5402	A7
5403	B3
6401	B2
6402	B2
6403	B3
6404	C7
6405	C4
6406	C4
6407	A7
6408	A7
6409	A7
6410	A7
6411	A8
6412	A2
6413	B7
6414	A5
6415	A2
6416	B7
6417	B7
6418	B7
6419	C2
6420	C8
6421	B2
6422	C2
6423	C2
7403	A2
7413	B4
7414	B4
9401	B3
9402	B3
9403	B4
9404	B3
9405	C3
9406	C3
9407	C3
9408	C3
9409	C3
9410	A1
9411	B4
9412	B5
9413	B5
9414	B5
9415	B5
9416	B5
9417	B8
9418	B8
9419	C6
9420	B6
9421	A5
9422	B5
9423	B6
9424	B6
9425	A6
9426	A6
9427	B5
9428	B6
9429	A6
9430	B3
9431	B7
9432	A7
9433	A6
9434	B7
9435	C8
9436	C4
9438	B7
9439	B8
9440	C8
9442	C8
9443	C8
9444	C9
9445	B4
9446	A8
9447	A8
9448	A8
9449	B8
9450	B8
9451	B8
9452	A8
9453	A2
9454	C8
9455	C2
9456	B3
9457	A2
9458	B4
9459	A1
9461	A6
9462	A5
9463	C6
9464	A8
9465	A8
9466	A2
9467	A3
9470	C2
9471	C2
9472	C2
9473	C2



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram respectively partslist

7415	B4
7416	A3
7417	A3
7418	B3
7419	B2
7421	B2
7422	B3
7402	A2
7404	B9
7405	B5
7406	B2
7407	B3
7408	B2
7409	B3
7411	A7
7412	A8
4418	C5
4420	A5
4421	C2
4422	A9
4423	A8
4424	B5
4425	B7
4426	A3
6424	B2
4404	A7
4406	B2
4407	A8
4408	B9
4410	C4
4411	B9
4413	C6
4416	A5
4417	B2
3776	A5
3777	A5
3778	A5
3779	A5
3780	A5
3781	A5
4401	A5
4402	A7
4403	A7
3767	A4
3768	A4
3769	A4
3770	A4
3771	A4
3772	A4
3773	A4
3774	A5
3775	A5
3758	A3
3759	A3
3760	A4
3761	A3
3762	A4
3763	A4
3764	A4
3765	A4
3766	A4
3501	A9
3502	B5
3751	A3
3752	A3
3753	A3
3754	A3
3755	A3
3756	A3
3757	A3
3492	B5
3493	A8
3494	A8
3495	B3
3496	B6
3497	B6
3498	B6
3499	B6
3500	A9
3481	A3
3482	A3
3483	B5
3484	A3
3485	A3
3486	B2
3487	B2
3490	A3
3491	B5
3470	B9
3472	B5
3473	A6
3474	A6
3475	A5
3476	B2
3478	A3
3479	B3
3480	A3
3461	B7
3462	B7
3463	B9
3464	B9
3465	C6
3466	B7
3467	B9
3468	C6
3469	B7
3445	A2
3446	A2
3449	A7
3451	A7
3454	A7
3455	C8
3458	C8
3459	C6
3460	C6
3431	B3
3433	B2
3434	B8
3437	B2
3438	B3
3439	B3
3440	B2
3441	B3
3442	B3
3417	B5
3418	B5
3419	B5
3420	B5
3421	B6
3422	B9
3428	B3
3429	B3
3430	B2
3396	A3
3400	A2
3403	B7
3409	A2
3410	C9
3411	C9
3414	A6
3415	A2
3416	B9
2475	A4
2476	A4
2477	A4
2478	A4
3391	C5
3392	A2
3393	B9
3394	A8
3395	A3
2466	A3
2467	A3
2468	A3
2469	A3
2470	A3
2471	A3
2472	A3
2473	A4
2474	A4
2457	A6
2458	A4
2459	A6
2460	A6
2461	A7
2462	C8
2463	A3
2464	A3
2465	A3
2437	A9
2438	B6
2439	B6
2440	B6
2441	B6
2442	C9
2443	C9
2444	A8
2454	B5
2424	B7
2425	B9
2426	B9
2431	B3
2432	A3
2433	A3
2434	B3
2435	B3
2436	A9
2413	B6
2414	B3
2415	B4
2416	B4
2417	B8
2419	A7
2421	C6
2422	C6
2423	B7
2401	B2
2402	B9
2403	B9
2404	A6
2405	B5
2407	B9
2408	B9
2410	A9
2411	B2



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram respectively partslist

ELECTRICAL PARTSLIST - FRONT BOARD

MISCELLANEOUS

1400	4822 242 11033	LN-G102-38(4,332MH)
1403	4822 242 72066	CST8,00MT
1404	4822 276 13114	SWI TACT 1P 20MA 15V
1405	4822 276 13114	SWI TACT 1P 20MA 15V
1406	4822 276 13114	SWI TACT 1P 20MA 15V
1407	4822 276 13114	SWI TACT 1P 20MA 15V
1408	4822 276 13114	SWI TACT 1P 20MA 15V
1409	4822 276 13114	SWI TACT 1P 20MA 15V
1410	4822 265 10981	15FE-BT-VK-N
1411	4822 276 13114	SWI TACT 1P 20MA 15V
1412	4822 276 13114	SWI TACT 1P 20MA 15V
1413	4822 276 13114	SWI TACT 1P 20MA 15V
1414	4822 276 13114	SWI TACT 1P 20MA 15V
1415	4822 276 13114	SWI TACT 1P 20MA 15V
1416	4822 276 13114	SWI TACT 1P 20MA 15V
1417	4822 276 13114	SWI TACT 1P 20MA 15V
1418	4822 276 13114	SWI TACT 1P 20MA 15V
1419	4822 276 13114	SWI TACT 1P 20MA 15V
1420	4822 276 13114	SWI TACT only in FR755
1421	4822 273 10372	12P EC16B12204(G3402
1422	4822 273 10372	12P EC16B12204(G3402
1423	4822 273 10365	ROTARY ENCODER 24P
1424	4822 265 11584	1P YKB21-5209
1428	4822 265 11606	3P YKC21- only in FR755
8002	4822 320 12706	FLEXIBLE FOIL 15P 220MM

CAPACITORS

2400	4822 124 41584	100UF 20% 10V
2401	5322 122 34123	1NF10%X7R 50V
2402	4822 122 33805	330PF10%X7R 63V
2403	4822 122 33173	560PF 10% X7R 50V
2404	5322 122 34123	1NF10%X7R 50V
2405	5322 122 32654	22NF10%X7R 63V
2407	5322 122 34099	470PF10%X7R 63V
2408	5322 122 32654	22NF10%X7R 63V
2409	4822 124 41576	2,2UF 20% 50V
2410	5322 122 32654	22NF10%X7R 63V
2411	4822 122 33575	220PF 5% NP0 63V
2412	4822 124 41751	47UF 20% 50V
2413	5322 122 32654	22NF10%X7R 63V
2414	5322 122 32654	22NF10%X7R 63V
2415	5322 122 32658	22PF 5% 50V
2416	5322 122 32658	22PF 5% 50V
2417	5322 122 32654	22NF10%X7R 63V
2420	4822 124 23432	100UF20% 10V
2421	5322 122 32654	22NF10%X7R 63V
2422	5322 122 32654	22NF10%X7R 63V
2423	5322 122 32654	22NF10%X7R 63V
2424	5322 122 32654	22NF10%X7R 63V
2425	5322 122 32654	22NF10%X7R 63V
2426	5322 122 32654	22NF10%X7R 63V
2427	5322 122 34123	1NF10%X7R 50V
2428	4822 124 40769	4,7UF20% 100V
2429	4822 124 41751	47UF 20% 50V
2430	4822 122 33575	220PF 5% NP0 63V CAS
2433	5322 122 32531	100PF 5%NP0 50V
2434	4822 126 13473	220NF80-20% 50V
2435	4822 122 33575	220PF 5% NP0 63V CAS
2436	4822 122 33575	220PF 5% NP0 63V CAS
2437	4822 122 33575	220PF 5% NP0 63V CAS
2438	4822 122 33575	220PF 5% NP0 63V CAS
2439	4822 122 33575	220PF 5% NP0 63V CAS
2440	4822 122 33575	220PF 5% NP0 63V CAS
2441	4822 122 33575	220PF 5% NP0 63V CAS
2442	4822 126 13692	47PF 1% NP0 63V
2443	4822 126 13692	47PF 1% NP0 63V
2444	5322 122 32654	22NF10%X7R 63V
2445	5322 126 10223	4,7NF10%X7R 63V
2447	5322 126 10223	4,7NF10%X7R 63V
2448	5322 122 34123	1NF10%X7R 50V
2449	5322 122 34123	1NF10%X7R 50V
2454	5322 122 32654	22NF10%X7R 63V
2455	4822 124 41751	47UF 20% 50V
2456	4822 124 41751	47UF 20% 50V
2457	5322 122 32654	22NF10%X7R 63V
2458	5322 122 32654	22NF10%X7R 63V
2459	5322 122 32654	22NF10%X7R 63V
2460	5322 122 32654	22NF10%X7R 63V
2461	5322 122 32654	22NF10%X7R 63V
2462	5322 122 34123	1NF10%X7R 50V
2467	5322 122 32531	100PF 5%NP0 50V
2468	5322 122 32531	100PF 5%NP0 50V
2469	5322 122 32531	100PF 5%NP0 50V
2470	5322 122 32531	100PF 5%NP0 50V
2471	5322 122 32531	100PF 5%NP0 50V
2472	5322 122 32531	100PF 5%NP0 50V
2473	5322 122 32531	100PF 5%NP0 50V
2474	5322 122 32531	100PF 5%NP0 50V
2475	5322 122 32531	100PF 5%NP0 50V
2476	5322 122 32531	100PF 5%NP0 50V
2477	5322 122 32531	100PF 5%NP0 50V
2478	5322 122 32531	100PF 5%NP0 50V

RESISTORS

3391	4822 051 10102	1K00 2% 0,25W
3392	4822 051 20223	22K00 5% 0,1W
3393	4822 051 20223	22K00 5% 0,1W
3394	4822 051 20223	22K00 5% 0,1W
3396	4822 051 10102	1K00 2% 0,25W
3400	4822 051 20479	47R00 5% 0,1W
3401	4822 116 83864	10K 5% 0,5W
3402	4822 116 83864	10K 5% 0,5W
3403	4822 117 11507	6K8 1% 0,1W
3404	4822 116 52219	330E 5% 0,5W
3405	4822 116 52257	22K 5% 0,5W
3406	4822 116 83864	10K 5% 0,5W
3407	4822 116 83864	10K 5% 0,5W
3408	4822 116 83864	10K 5% 0,5W
3409	4822 051 10102	1K00 2% 0,25W
3410	4822 117 11449	2K2 1% 0,1W
3411	4822 117 13579	220K 1% 0.1W
3412	4822 116 83864	10K 5% 0,5W
3413	4822 050 11002	1K00 1% 0,4W
3414	4822 051 10102	1K00 2% 0,25W
3415	4822 051 20008	0R00 JUMP. (0805)
3416	4822 117 10833	10K 1% 0,1W
3417	4822 117 10833	10K 1% 0,1W
3418	4822 117 10833	10K 1% 0,1W
3419	4822 117 10833	10K 1% 0,1W
3420	4822 117 10833	10K 1% 0,1W
3421	4822 117 10833	10K 1% 0,1W
3422	4822 117 10833	10K 1% 0,1W
3424	4822 050 11002	1K00 1% 0,4W
3426	4822 050 11002	1K00 1% 0,4W
3427	4822 117 10353	150R 1% 0,1W
3428	4822 051 20273	27K00 5% 0,1W
3429	4822 051 20223	22K00 5% 0,1W
3430	4822 051 20223	22K00 5% 0,1W
3431	4822 117 10833	10K 1% 0,1W
3432 ▲	4822 052 10478	4R70 5% 0,33W
3433	4822 117 10833	10K 1% 0,1W
3434	4822 051 20223	22K00 5% 0,1W
3435	4822 116 52257	22K 5% 0,5W
3436	4822 116 52257	22K 5% 0,5W
3437	4822 051 20104	100K00 5% 0,1W
3438	4822 051 20333	33K00 5% 0,1W
3439	4822 117 10833	10K 1% 0,1W
3440	4822 117 11503	220R 1% 0.1W
3441	4822 051 20223	22K00 5% 0,1W
3442	4822 051 20104	100K00 5% 0,1W
3443	4822 116 52219	330E 5% 0,5W
3444	4822 116 52219	330E 5% 0,5W
3447	4822 116 52219	330E 5% 0,5W
3449	4822 051 20104	100K00 5% 0,1W
3451	4822 117 10833	10K 1% 0,1W
3452	4822 116 52219	330E 5% 0,5W
3453	4822 116 52219	330E 5% 0,5W
3454	4822 051 20008	0R00 JUMP. (0805)
3455	4822 051 20223	22K00 5% 0,1W
3457	4822 116 52219	330E 5% 0,5W
3458	4822 051 20331	330R00 5% 0,1W
3459	4822 117 10833	10K 1% 0,1W
3460	4822 117 10833	10K 1% 0,1W
3461	4822 117 10833	10K 1% 0,1W
3462	4822 117 10833	10K 1% 0,1W
3463	4822 117 10833	10K 1% 0,1W
3464	4822 117 10833	10K 1% 0,1W
3465	4822 117 11503	220R 1% 0.1W
3466	4822 117 11503	220R 1% 0.1W
3467	4822 117 11503	220R 1% 0.1W
3468	4822 117 11503	220R 1% 0.1W
3469	4822 117 11503	220R 1% 0.1W
3470	4822 117 11503	220R 1% 0.1W
3471	4822 051 10102	1K00 2% 0,25W
3472	4822 051 10102	1K00 2% 0,25W
3473	4822 051 20008	0R00 JUMP. (0805)
3474	4822 051 20008	0R00 JUMP. (0805)
3475	4822 051 20104	100K00 5% 0,1W
3476	4822 051 20104	100K00 5% 0,1W
3477	4822 117 12521	68R 1% 0,1W
3482	4822 051 20104	100K00 5% 0,1W
3483	4822 051 20104	100K00 5% 0,1W
3488	4822 050 24708	4R70 1% 0,6W
3489	4822 050 24708	4R70 1% 0,6W
3490	4822 051 20008	0R00 JUMP. (0805)
3491	4822 051 20104	100K00 5% 0,1W
3493	4822 051 20471	470R00 5% 0,1W
3494	4822 051 20471	470R00 5% 0,1W
3495	4822 051 20471	470R00 5% 0,1W
3496	4822 051 20471	470R00 5% 0,1W
3497	4822 051 20471	470R00 5% 0,1W
3498	4822 051 20471	470R00 5% 0,1W
3499	4822 051 20471	470R00 5% 0,1W
3500	4822 051 20471	470R00 5% 0,1W
3501	4822 051 20471	470R00 5% 0,1W
3755	4822 051 20333	33K00 5% 0,1W
3756	4822 051 20333	33K00 5% 0,1W
3757	4822 051 20333	33K00 5% 0,1W
3758	4822 051 20333	33K00 5% 0,1W
3759	4822 051 20333	33K00 5% 0,1W
3760	4822 051 20333	33K00 5% 0,1W
3761	4822 051 20333	33K00 5% 0,1W
3762	4822 051 20333	33K00 5% 0,1W
3763	4822 051 20333	33K00 5% 0,1W
3764	4822 051 20333	33K00 5% 0,1W
3765	4822 051 20333	33K00 5% 0,1W
3766	4822 051 20333	33K00 5% 0,1W
3767	4822 051 20333	33K00 5% 0,1W
3768	4822 051 20333	33K00 5% 0,1W
3769	4822 051 20333	33K00 5% 0,1W
3770	4822 051 20333	33K00 5% 0,1W
3771	4822 051 20333	33K00 5% 0,1W
3772	4822 051 20333	33K00 5% 0,1W
3773	4822 051 20333	33K00 5% 0,1W
3774	4822 051 20333	33K00 5% 0,1W
3775	4822 051 20333	33K00 5% 0,1W
3776	4822 051 20333	33K00 5% 0,1W
3777	4822 051 20333	33K00 5% 0,1W
3778	4822 051 20333	33K00 5% 0,1W
3779	4822 051 20333	33K00 5% 0,1W
3780	4822 051 20333	33K00 5% 0,1W
3781	4822 051 20333	33K00 5% 0,1W
4401	4822 051 20008	0R00 JUMP. (0805)
4402	4822 051 20008	0R00 JUMP. (0805)
4403	4822 051 20008	0R00 JUMP. (0805)
4404	4822 051 20008	0R00 JUMP. (0805)
4406	4822 051 20008	0R00 JUMP. (0805)
4407	4822 051 20008	0R00 JUMP. (0805)
4408	4822 051 20008	0R00 JUMP. (0805)
4410	4822 051 20008	0R00 JUMP. (0805)
4411	4822 051 20008	0R00 JUMP. (0805)
4413	4822 051 20008	0R00 JUMP. (0805)
4416	4822 051 20008	0R00 JUMP. (0805)
4417	4822 051 20008	0R00 JUMP. (0805)
4418	4822 051 20008	0R00 JUMP. (0805)
4420	4822 051 20008	0R00 JUMP. (0805)
4421	4822 051 20008	0R00 JUMP. (0805)
4422	4822 051 20008	0R00 JUMP. (0805)
4423	4822 051 20008	0R00 JUMP. (0805)
4424	4822 051 20008	0R00 JUMP. (0805)
4425	4822 051 20008	0R00 JUMP. (0805)
4426	4822 051 20008	0R00 JUMP. (0805)
4450	4822 051 20008	0R00 JUMP. (0805)

FILTERS

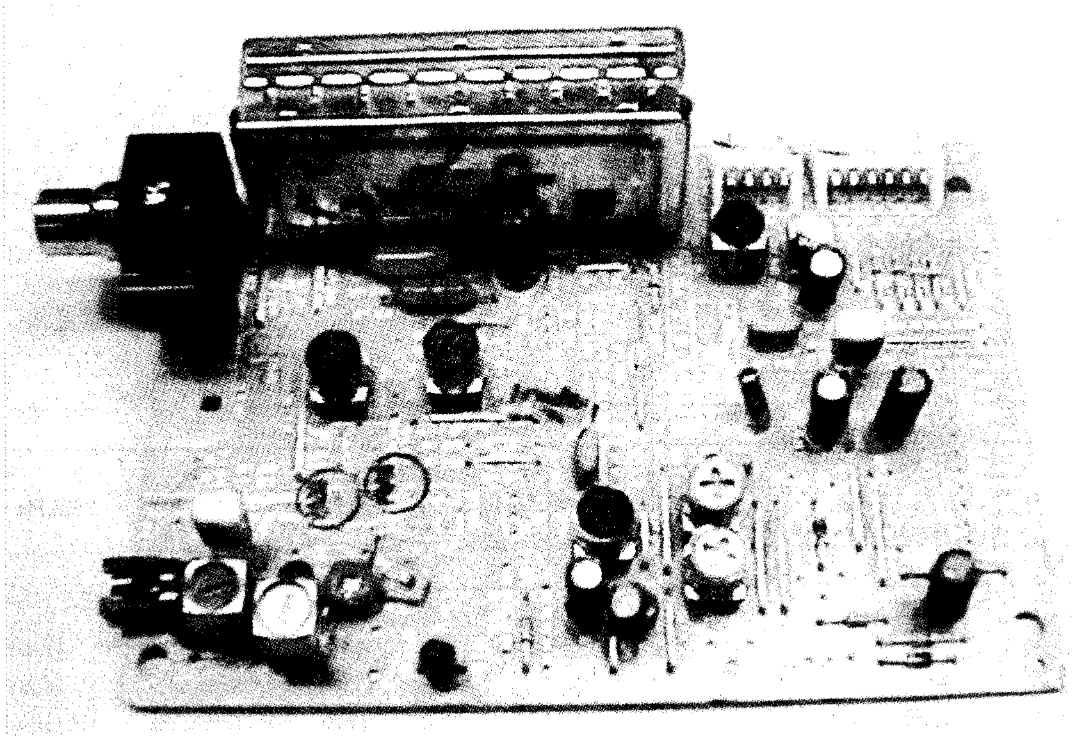
5400	4822 157 11477	LAL02TB2R2J
5401	4822 157 11477	LAL02TB2R2J
5403	4822 157 11477	LAL02TB2R2J

DIODES

6400	4822 130 11606	LED STAND-BY
6401	4822 130 10792	LTL-1CHPE
6402	4822 130 30621	1N4148
6403	4822 130 30621	1N4148
6404	4822 130 30621	1N4148
6405	4822 130 30621	1N4148
6406	4822 130 30621	1N4148
6410	4822 130 10792	LTL-1CHPE
6411	4822 130 30621	1N4148
6414	4822 130 30621	1N4148
6419	4822 130 30621	1N4148
6420	4822 130 30621	1N4148
6421	4822 130 10792	LTL-1CHPE

TRANSISTORS & ICs

7402	4822 130 11607	PDTA144ET
7403	4822 130 10165	GP1U28XP
7404	4822 209 31981	SAA6579T
7405	4822 209 17445	M24C08-MN6
7406	4822 130 60511	BC847B
7407	4822 130 60511	BC847B
7408	4822 130 60511	BC847B
7409	4822 130 60511	BC847B
7412	5322 209 11306	HEF4094BT
7414	4822 135 00275	12-MT-74GK
7415	4822 209 17446	TMP87CS71F/FR755.1
7417	4822 130 60511	BC847B

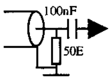


TUNER 95 BOARD

TABLE OF CONTENTS

Adjustment table 7A-2
Blockdiagram 7A-3
Component layout 7A-4
Circuit diagram 7A-5
Partslist 7A-6

TUNER 95 bis Adjustment Table (FM, MW, LW with Frame antenna)

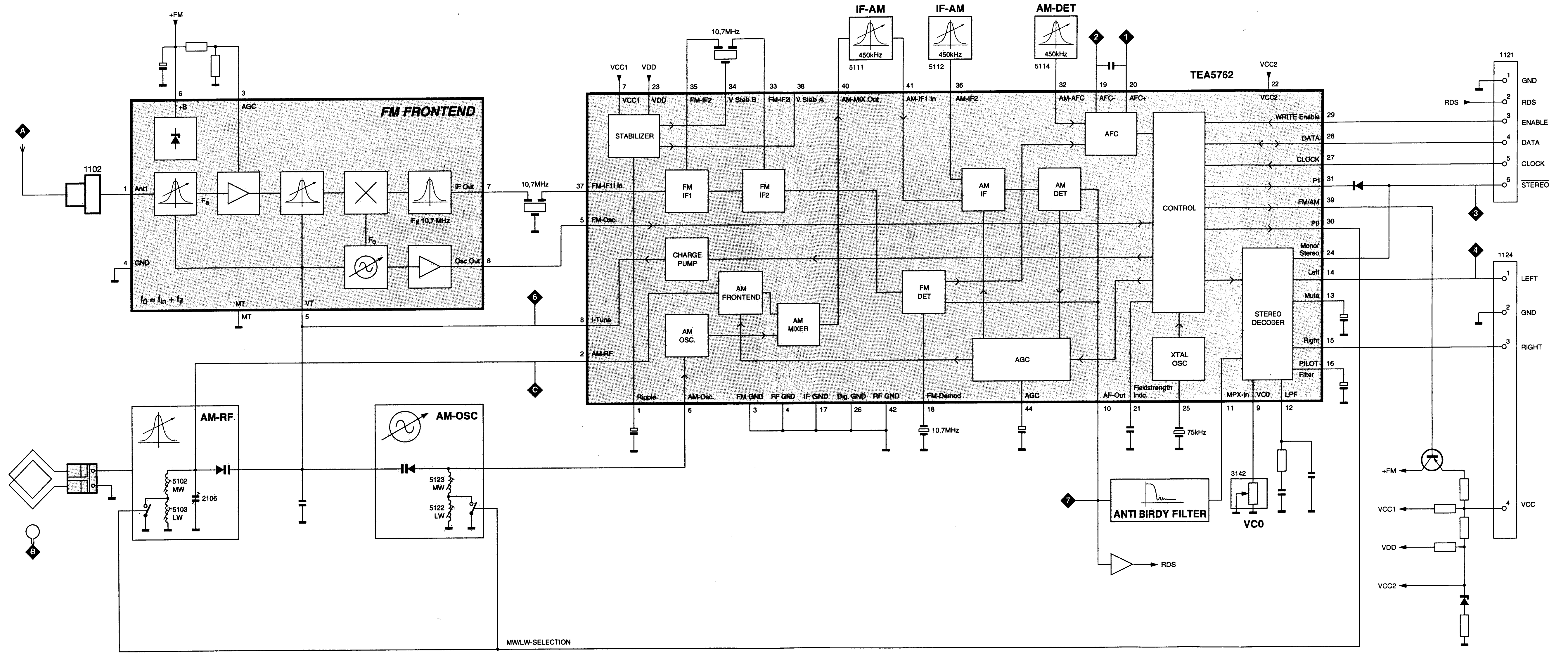
Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter
VARICAP ALIGNMENT						
FM (50)			108 MHz	check	6	7 ... 9V
87.5 - 108 MHz			87.5 MHz	check		1.3 ... 2V
MW (9)			1602 kHz	5123		8.3V ± 0.2V
531 - 1602 kHz			531 kHz	check		1V ± 0.4V
LW (3)			279 kHz	5122		8.3V ± 0.2V
153 - 279 kHz			153 kHz	check		1V ± 0.4V
FM – DETECTION						
FM	98 Mhz 1mV continuous wave ***short pin 21 (IC7101) to ground***	A	98 MHz	5107	1 2	0mV ± 3mV
FM – VCO						
FM	98 Mhz 1 mV continuous wave	A	98 MHz	3142	3	152kHz ± 1 kHz
DISTORTION						
FM	98 Mhz 1 mV 90 % L + 9 % pilot mod = 1kHz	A	98MHz	mixcoil inside Tuner 1110	4	Distortion minimum
AM – IF						
MW	450kHz Δf = 10kHz Low as possible Swept signal		MW	5111	7	symmetrical and max. height ↕
				5112		
	450kHz continuous wave	C		5114	1 2	0mV ± 2mV
AM - RF						
MW	558kHz Mod = 1kHz 30 % AM	B	558kHz	5102	7	MAX ↕
	1494 kHz		1494kHz	2106		
LW	198kHz mod = 1kHz 30 % AM	*	198kHz	5103		MAX

adjtable for 3104 217 04121/04341

* Signal send via a frame antenna
(..) = tuning grid in kHz

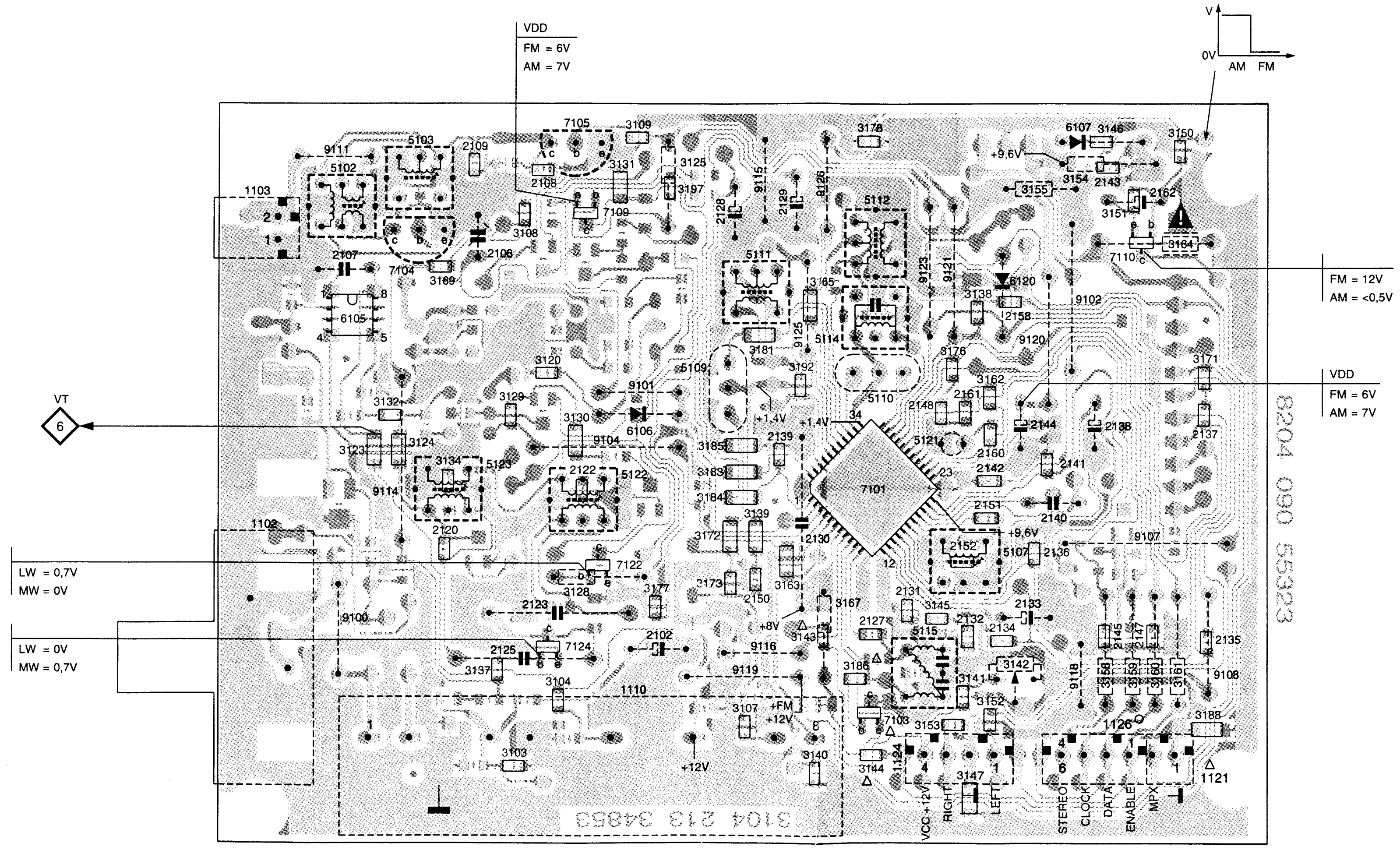
↕ repeat

BLOCKDIAGRAM

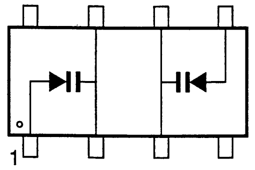

+FM
FM FRONTEND
6
3
+B
AGC
A
1102
1 Ant1
Fa
IF Out 7
Fif 10,7 MHz
Fo
Osc Out 8
4 GND
f0 = fin + fif
MT
VT
MT
5
10,7MHz
10,7MHz
IF-AM
IF-AM
AM-DET
450kHz
450kHz
450kHz
5111
5112
5114
2
1
TEA5762
VCC1
VDD
VCC2
7 23 35 34 33 38 40 41 36 32 19 20 22
VCC1
VDD
FM-IF2
V Stab B
FM-IF2I
V Stab A
AM-MIX Out
AM-IF1 In
AM-IF2
AM-AFC
AFC-
AFC+
VCC2
STABILIZER
AFC
37 FM-IF1I In
5 FM Osc.
8 I-Tune
2 AM-RF
FM IF1
FM IF2
AM IF
AM DET
CHARGE PUMP
AM FRONTEND
AM MIXER
AM OSC.
FM DET
AGC
CONTROL
XTAL OSC
STEREO DECODER
WRITE Enable 29
DATA 28
CLOCK 27
P1 31
FM/AM 39
P0 30
Mono/ Stereo 24
Left 14
Mute 13
Right 15
PILOT Filter 16
Ripple
AM-Osc.
FM GND
RF GND
IF GND
Dig. GND
RF GND
FM-Demod
AGC
AF-Out
Fieldstrength Indc.
MPX-In
VCO
LPF
1 6 3 4 17 26 42 18 44 10 21 25 11 9 12
10,7MHz
75kHz
6
C
AM-RF
AM-OSC
5102 MW
5103 LW
2106
5123 MW
5122 LW
B
MW/LW-SELECTION
7
ANTI BIRDY FILTER
3142
VC0
RDS
1121
1 GND
RDS
2 RDS
3 ENABLE
4 DATA
5 CLOCK
6 STEREO
3
4
1124
1 LEFT
2 GND
3 RIGHT
4 VCC
+FM
VCC1
VDD
VCC2

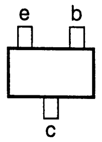
1102	F4	2107	C4	2128	C7	2136	G10	2144	E10	2160	E9	3120	D6	3132	E5	3143	G8	3153	G9	3163	F8	3176	D9	3188	G11	5111	C8	6106	E7	7110	D11	9108	G11	9121	D9
1103	C4	2108	C6	2129	C8	2137	E11	2145	G11	2161	E9	3123	E4	3134	E5	3144	H9	3154	C10	3164	C11	3177	F7	3192	D8	5112	C9	6107	B10	7122	F7	9111	C4	9123	D9
1110	G7	2109	C5	2130	F8	2138	E10	2147	G11	2162	C11	3124	E5	3137	G5	3145	F9	3155	C10	3165	D8	3178	B8	3197	C7	5114	D8	6120	D10	7124	G6	9114	E5	9125	D8
1121	H11	2120	F5	2131	F9	2139	E8	2148	E9	3103	H6	3125	C7	3138	D9	3146	B10	3158	G11	3167	F8	3181	D8	5102	C4	5115	G9	7101	E9	9100	F4	9115	C8	9126	C8
1124	H9	2122	E6	2132	F9	2140	F10	2150	F8	3104	G6	3128	F6	3139	F8	3147	H9	3159	G11	3169	D5	3183	E7	5103	C5	5121	E9	7103	G9	9101	E7	9116	G8		
1126	G10	2123	F6	2133	F10	2141	E10	2151	F9	3107	G7	3129	E6	3140	H8	3150	C11	3160	G11	3171	D11	3184	E7	5107	F10	5122	E7	7104	D5	9102	D10	9118	G10		
2102	G7	2125	G6	2134	G10	2142	E9	2152	F9	3108	C6	3130	E6	3141	G9	3151	C10	3161	G11	3172	F7	3185	E7	5109	D7	5123	E5	7105	B6	9104	E6	9119	G7		
2106	C5	2127	F9	2135	G11	2143	C10	2158	D10	3109	B7	3131	C6	3142	G10	3152	G9	3162	D9	3173	F7	3186	G8	5110	E9	6105	D4	7109	C6	9107	F11	9120	D10		

TUNER 95 bis Combi: Copper side view


VDD
FM = 6V
AM = 7V
V
0V
AM FM
FM = 12V
AM = <0,5V
VDD
FM = 6V
AM = 7V
VT
6
LW = 0,7V
MW = 0V
LW = 0V
MW = 0,7V
1103
9111
5102
5103
2109
7105
3109
3131
3125
3197
2108
7109
3108
2106
7104
3169
2107
6105
3120
3129
3132
3130
9101
6106
9104
3123
3124
3134
5123
9114
2122
5122
2120
1102
7122
3128
2123
9100
3177
2125
7124
3137
3104
3103
1110
2102
9116
9119
3107
+FM
+12V
+12V
3140
2128
2129
9115
9126
5112
5111
3165
9125
5114
3181
3192
5109
+1,4V
2139
3185
3183
3184
3139
3172
2130
3173
2150
3163
+8V
3143
3167
3178
9123
9121
6120
3138
2158
9102
9120
3176
3162
5110
2148
5121
2161
2144
2138
2137
2160
2142
2141
7101
2151
2140
+9,6V
5107
2136
2152
9107
2131
3145
2133
2127
5115
2132
2134
3186
3141
3142
3152
9118
3158
3159
3160
3161
2145
2147
2135
9108
3188
1126
7103
3153
3144
1124
3147
1121
VCC +12V
RIGHT
LEFT
STEREO
CLOCK
DATA
ENABLE
MPX
6107
3146
3150
+9,6V
3155
3154
2143
2162
3151
7110
3164
3171
8204 090 55323
3104 213 34853

IC 6105



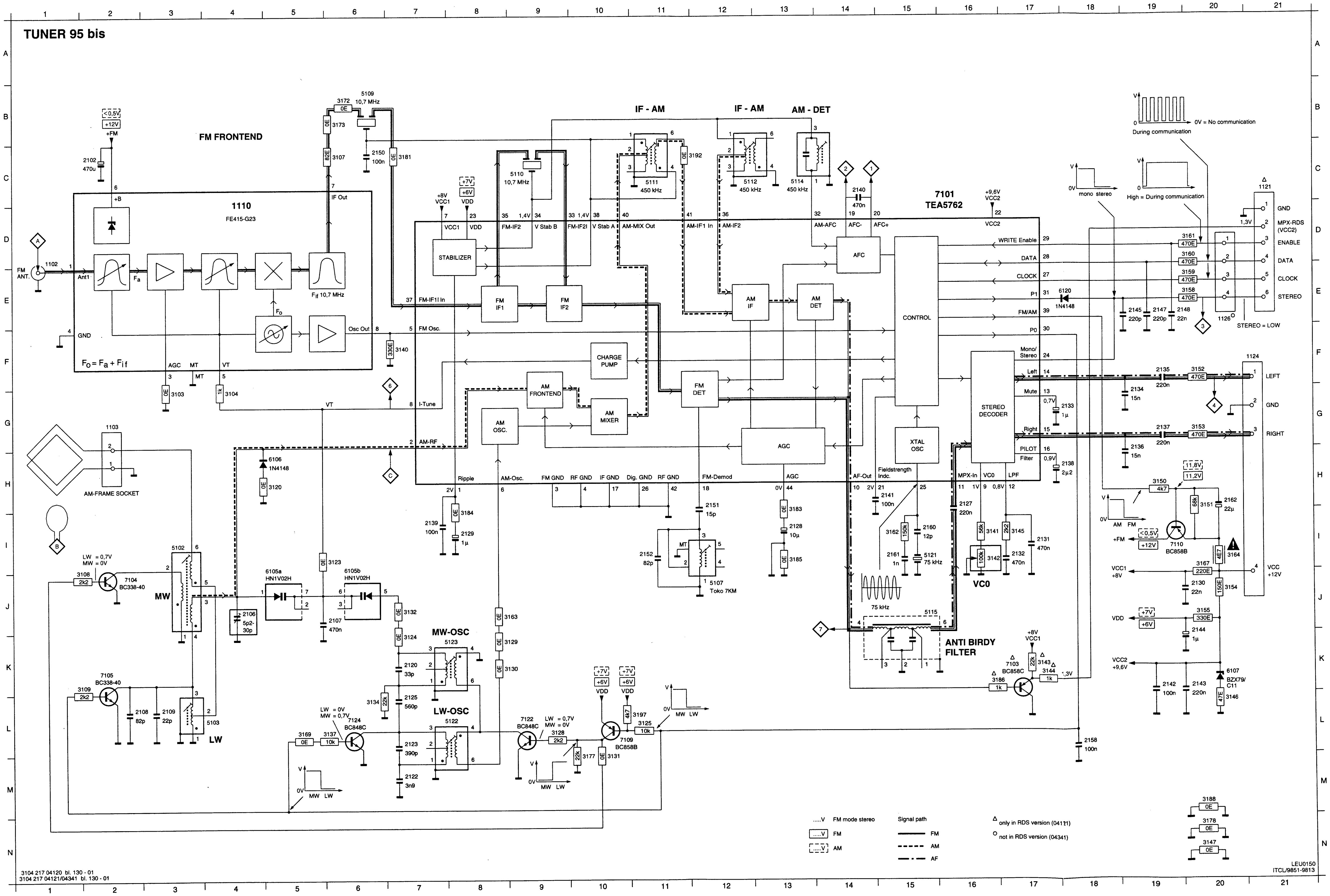


△ only in RDS version (04121)

○ not in RDS version (04341)

1102	D1
1103	G2
1110	D4
1121	C21
1124	F21
1126	E20
2102	C2
2106	J4
2107	J6
2108	L2
2109	L3
2120	K7
2122	M7
2123	L7
2125	L7
2127	H16
2128	I13
2129	I8
2130	J20
2131	I17
2132	I17
2133	G18
2134	G19
2135	F19
2136	H19
2137	G19
2138	H18
2139	I7
2140	C14
2141	H15
2142	K19
2143	K20
2144	K20
2145	E19
2147	E19
2148	E19
2150	C6
2151	H12
2152	I11
2158	L18
2160	I15
2161	I15
2162	H20
3103	G3
3104	G4
3107	C6
3108	J1
3109	K1
3120	H5
3123	I6
3124	K7
3125	L11
3128	L9
3129	K8
3130	K8
3131	M10
3132	J7
3134	L6
3137	L5
3140	F7
3141	I16
3142	I16
3143	K17
3144	K17
3145	I17
3146	L20
3147	N20
3150	H19
3151	I20
3152	F20
3153	G20
3154	J20
3155	J20
3158	E19
3159	E19
3160	D19
3161	D19
3162	I15
3163	J8
3164	I20
3167	I20
3169	L5
3172	B6
3173	B6
3177	M10
3178	N20
3181	C7
3183	I13
3184	I8
3185	I13
3186	K16
3188	M20
3192	C12
3197	L11
5102	I3
5103	L4
5107	J12
5109	B6
5110	C9
5111	C11
5112	C12
5114	C13
5115	J15
5121	I15
5122	L7
5123	K7
6105a	I5
6105b	I6
6106	H5
6107	K20
6120	E17
7101	C15
7103	K17
7104	J2
7105	K2
7109	L10
7110	I19
7122	L9
7124	L6

TUNER 95 bis


FM FRONTEND
1110
FE415-G23
FM ANT.
1102
Ant1
GND
+B
IF Out
Osc Out
AGC
MT
VT
F0 = Fa + Fif
Fif 10,7 MHz
<0,5V
+12V
+FM
2102 470u
3172 0E
5109 10,7 MHz
3173
3107 82E
2150 100n
3181
3140 330E
3103
3104 1k
IF - AM
IF - AM
AM - DET
5110 10,7 MHz
5111 450 kHz
5112 450 kHz
5114 450 kHz
3192
2140 470n
7101
TEA5762
+8V VCC1
+7V +6V VDD
+9,6V VCC2
VCC1
VDD
FM-IF2
V Stab B
FM-IF2I
V Stab A
AM-MIX Out
AM-IF1 In
AM-IF2
AM-AFC
AFC-
AFC+
VCC2
STABILIZER
FM IF1
FM IF2
FM-IF1I In
FM Osc.
I-Tune
AM-RF
CHARGE PUMP
AM FRONTEND
AM MIXER
AM OSC.
AM IF
AM DET
FM DET
AFC
CONTROL
AGC
XTAL OSC
STEREO DECODER
WRITE Enable
DATA
CLOCK
P1
FM/AM
P0
Mono/Stereo
Left
Mute
Right
PILOT Filter
Ripple
AM-Osc.
FM GND
RF GND
IF GND
Dig. GND
RF GND
FM-Demod
AGC
AF-Out
Fieldstrength Indc.
MPX-In
VCO
LPF
6120 1N4148
2145 220p
2147 220p
2148 22n
3161 470E
3160 470E
3159 470E
3158 470E
1121
1126
GND
MPX-RDS (VCC2)
ENABLE
DATA
CLOCK
STEREO
STEREO = LOW
1,3V
0V = No communication
During communication
High = During communication
mono stereo
1124
2135 220n
3152 470E
2134 15n
LEFT
GND
2137 220n
3153 470E
2136 15n
RIGHT
2133 1μ
2138 2μ2
0,7V
0,9V
1103
AM-FRAME SOCKET
6106 1N4148
3120
2139 100n
3184
2129 1μ
2151 15p
2152 82p
5107 Toko 7KM
3183
2128 10μ
3185
2141 100n
2127 220n
3162 150k
2160 12p
2161 1n
5121 75 kHz
3141 56k
3145 2k2
3142 100k
2132 470n
2131 470n
VCO
75 kHz
5115
ANTI BIRDY FILTER
11,8V
11,2V
3150 4k7
3151 68k
2162 22μ
AM FM
7110 BC858B
3164
3167 220E
VCC1 +8V
VCC +12V
2130 22n
3154 150E
VDD
3155 330E
2144 1μ
VCC2 +9,6V
2142 100n
2143 220n
6107 BZX79/C11
3146 47E
+8V VCC1
7103 BC858C
3186 1k
3143
3144 1k
1,3V
2158 100n
LW = 0,7V MW = 0V
3108 2k2
7104 BC338-40
5102
MW
7105 BC338-40
3109 2k2
2108 82p
2109 22p
5103
LW
6105a HN1V02H
6105b HN1V02H
2106 5p2-30p
3123
2107 470n
3132
3124
MW-OSC
5123
2120 33p
3134 22k
2125 560p
LW-OSC
5122
2123 390p
2122 3n9
3163
3129
3130
LW = 0V MW = 0,7V
7124 BC848C
3169 0E
3137 10k
7122 BC848C
LW = 0,7V MW = 0V
3128 2k2
3177 22k
3131
7109 BC858B
3197 4k7
3125 10k
MW LW
MW LW
MW LW
3188 0E
3178 0E
3147 0E
....V FM mode stereo
V FM
V AM
Signal path
FM
AM
AF
Δ only in RDS version (04111)
○ not in RDS version (04341)
A B C D E F G H I J K L M N
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

3104 217 04120 bl. 130 - 01
3104 217 04121/04341 bl. 130 - 01

LEU0150
ITCL/9851-9813

PCS 69 717

ELECTRICAL PARTSLIST - TUNER 95 BOARD

MISCELLANEOUS

1102	4822 267 10283	YKD31-0432
1103	4822 265 31184	S2B-XH-A-BK
1110	4822 210 10739	FE415-G23

CAPACITORS

2102	4822 124 80791	470UF20%16V
2106	4822 125 60102	5P2-30P N750100V
2107	4822 121 51252	470NF 5%63V
2108	4822 126 13695	82PF 1% NP063V
2109	5322 122 32658	22PF 5% 50V
2120	5322 122 32659	33PF5%50V
2122	5322 126 10465	3,9NF 10% X7R 50V 08
2123	4822 121 10766	390PF 1% 630V KP464
2125	4822 121 10578	560P1%630V
2127	4822 122 32927	220NF +80-20%Y5V 50V
2128	4822 124 41579	10UF 20% 50V
2129	4822 124 40242	1UF20%63V
2130	4822 126 11585	22NF+80-20% Y5V 25V
2131	4822 122 33325	470NF 16V
2132	4822 122 33325	470NF 16V
2133	4822 124 40242	1UF20%63V
2134	4822 126 13188	15NF 5% X7R63V
2135	4822 122 32927	220NF +80-20%Y5V 50V
2136	4822 126 13188	15NF 5% X7R63V
2137	4822 122 32927	220NF +80-20%Y5V 50V
2138	4822 124 41576	2,2UF 20% 50V
2139	4822 126 10002	100NF20%Y5V 25V
2140	4822 121 51252	470NF 5%63V
2141	4822 122 31947	100NF20%Y5V 63V
2142	4822 122 31947	100NF20%Y5V 63V
2143	4822 122 32927	220NF +80-20%Y5V 50V
2144	4822 124 40242	1UF20%63V
2145	4822 122 33575	220PF5%NPO50V
2147	4822 122 33575	220PF5%NPO50V
2148	4822 122 33809	22NF20%Y5V 50V
2150	4822 122 31947	100NF20%Y5V 63V
2151	4822 126 14236	50V 15P 5%
2152	4822 126 13695	82PF 1% NP063V
2158	4822 122 31947	100NF20%Y5V 63V
2160	4822 122 32139	12PF 2%NP0 63V
2161	5322 122 34123	1NF10%X7R 50V
2162	4822 124 81151	22UF 50V

RESISTORS

3103	4822 051 20008	0R00 JUMP. (0805)
3104	4822 051 10102	1K002% 0,25W
3107	4822 051 20829	82R005%0,1W
3108	4822 117 11449	2K2 1%0,1W
3109	4822 117 11449	2K2 1%0,1W
3110	4822 051 20008	0R00 JUMP. (0805)
3111	4822 051 20008	0R00 JUMP. (0805)
3120	4822 051 20008	0R00 JUMP. (0805)
3123	4822 051 10008	0R005% 0,25W
3124	4822 051 10008	0R005% 0,25W
3125	4822 116 83864	10K5%0,5W
3128	4822 116 52256	2K2 5%0,5W
3129	4822 051 20008	0R00 JUMP. (0805)
3130	4822 051 10008	0R005% 0,25W
3131	4822 051 10008	0R005% 0,25W
3132	4822 051 20008	0R00 JUMP. (0805)
3134	4822 051 20223	22K005%0,1W
3135	4822 051 20008	0R00 JUMP. (0805)
3137	4822 117 10833	10K1%0,1W
3138	4822 051 20008	0R00 JUMP. (0805)
3139	4822 051 10008	0R005% 0,25W
3140	4822 051 20331	330R005%0,1W
3141	4822 117 11148	56K1%0,1W
3142	4822 100 11163	100K30%LIN0,1W
3143	4822 051 20223	22K005%0,1W
3144	4822 051 10102	1K002% 0,25W
3145	4822 117 11449	2K2 1%0,1W
3146	4822 051 20479	47R005%0,1W
3147	4822 051 10008	0R005% 0,25W
3150	4822 051 20472	4K705%0,1W
3151	4822 051 20683	68K005%0,1W
3152	4822 051 20471	470R005%0,1W
3153	4822 051 20471	470R005%0,1W
3154	4822 116 83868	150R5%0,5W
3155	4822 116 52219	330E5%0,5W
3158	4822 116 83883	470R5%0,5W
3159	4822 116 83883	470R5%0,5W
3160	4822 116 83883	470R5%0,5W
3161	4822 116 83883	470R5%0,5W
3162	4822 051 20224	220K005%0,1W
3163	4822 051 10008	0R005% 0,25W
3164	4822 052 10478	4R705% 0,33W
3165	4822 051 10008	0R005% 0,25W
3167	4822 116 83872	220R5%0,5W
3169	4822 051 20008	0R00 JUMP. (0805)
3171	4822 051 20008	0R00 JUMP. (0805)
3172	4822 051 10008	0R005% 0,25W
3173	4822 051 20008	0R00 JUMP. (0805)
3176	4822 051 20008	0R00 JUMP. (0805)
3177	4822 051 20223	22K005%0,1W

ELECTRICAL PARTSLIST - TUNER 95 BOARD

RESISTORS

3178	4822 051 10008	0R005% 0,25W
3181	4822 051 10008	0R005% 0,25W
3183	4822 051 10008	0R005% 0,25W
3184	4822 051 10008	0R005% 0,25W
3185	4822 051 10008	0R005% 0,25W
3186	4822 051 10102	1K002% 0,25W
3188	4822 051 10008	0R005% 0,25W
3192	4822 051 20008	0R00 JUMP. (0805)
3197	4822 051 20472	4K705%0,1W

COILS & FILTERS

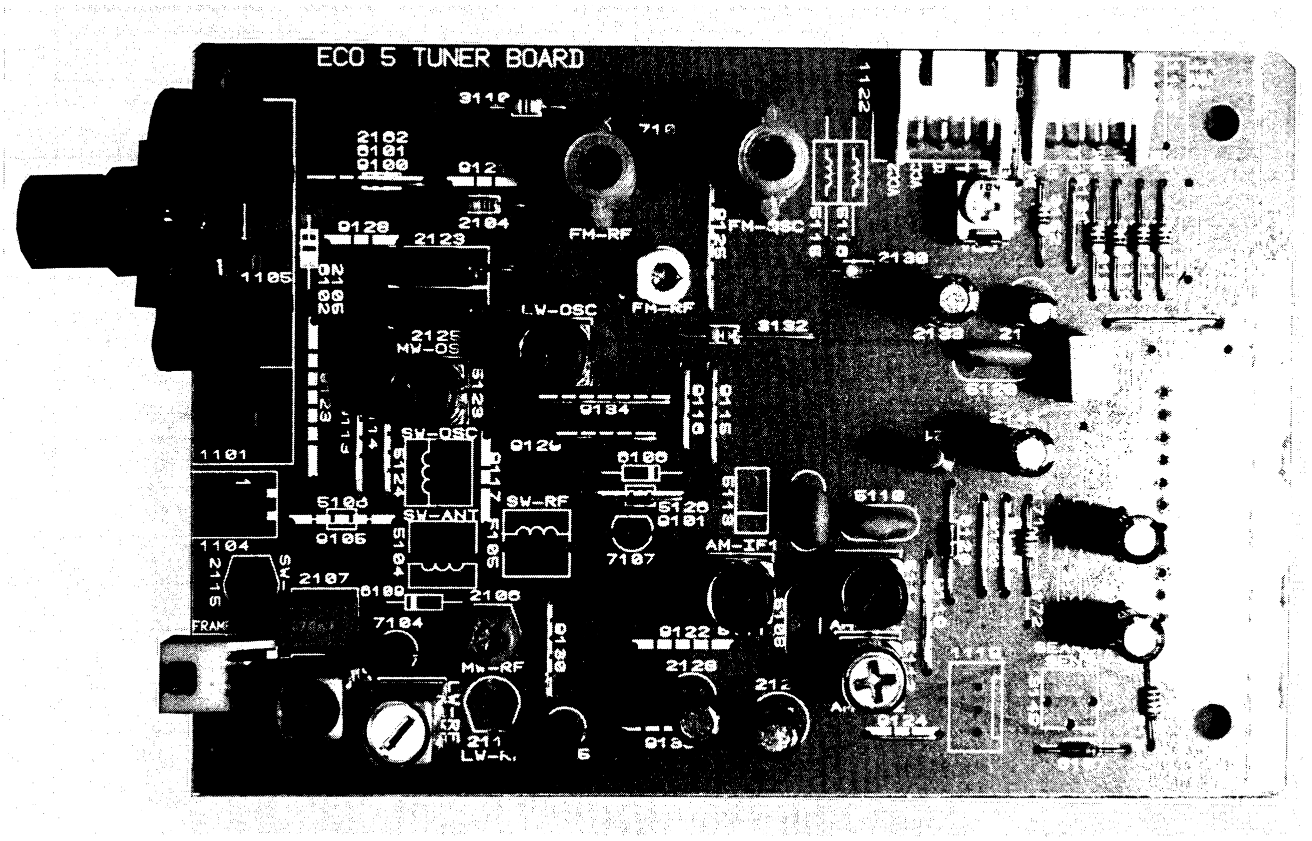
5102	4822 157 71634	MW AERIAL
5103	4822 157 71635	LW AERIAL
5107	4822 157 11443	2U4 10M7
5109	4822 157 71639	SFE10,7MJA10H-A-TF21
5110	4822 242 70665	SFE10,7MS3-A
5111	4822 158 60511	AM-1F
5112	4822 157 70302	F7MCS-12216N
5114	4822 157 70302	F7MCS-12216N
5115	4822 157 71636	BIRDIE COIL
5121	4822 242 10261	T6252F00 (75KHZ)
5122	4822 157 60517	110,00 UH8%
5123	4822 157 60517	110,00 UH8%

DIODES

6105	4822 130 83075	HN1V02H-B
6106	4822 130 30621	1N4148
6107	4822 130 34488	BZX79-B11
6120	4822 130 30621	1N4148

TRANSISTORS & INTERGRATED CIRCUITS

7101	4822 209 90315	TEA5762H/V1
7103	4822 130 42513	BC858C
7104	5322 130 44779	BC338-40
7105	5322 130 44779	BC338-40
7109	5322 130 41983	BC858B
7110	5322 130 41983	BC858B
7122	5322 130 42136	BC848C
7124	5322 130 42136	BC848C

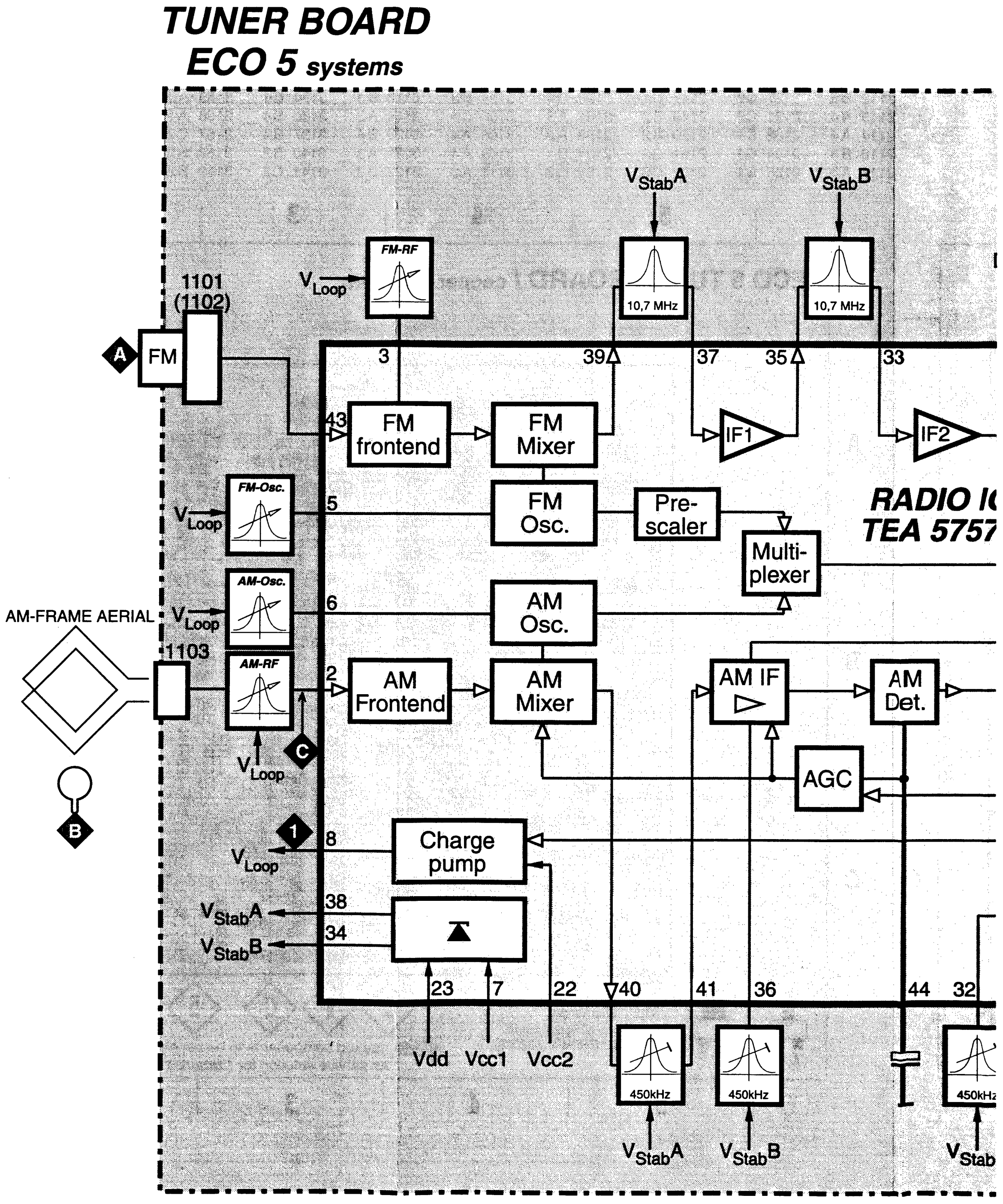

ECO 5 TUNER BOARD
FM-RF
FM-OSC
LW-OSC
MW-OSC
SW-OSC
SW-ANT
SW-RF
AM-IF1
MW-RF
LW-RF
1101
1104
1105
FRAME

TUNER BOARD ECO5

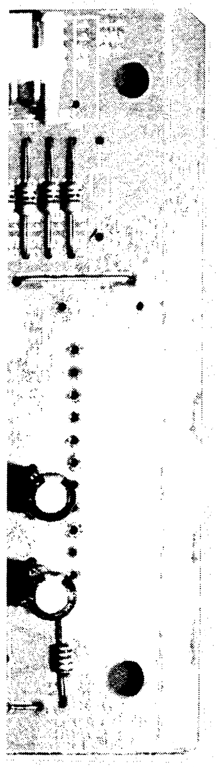
TABLE OF CONTENTS

Blockdiagram 7B-1
Adjustmant table 7B-2
Component layout...7B-2
Circuit diagram 7B-3
Partslist 7B-4

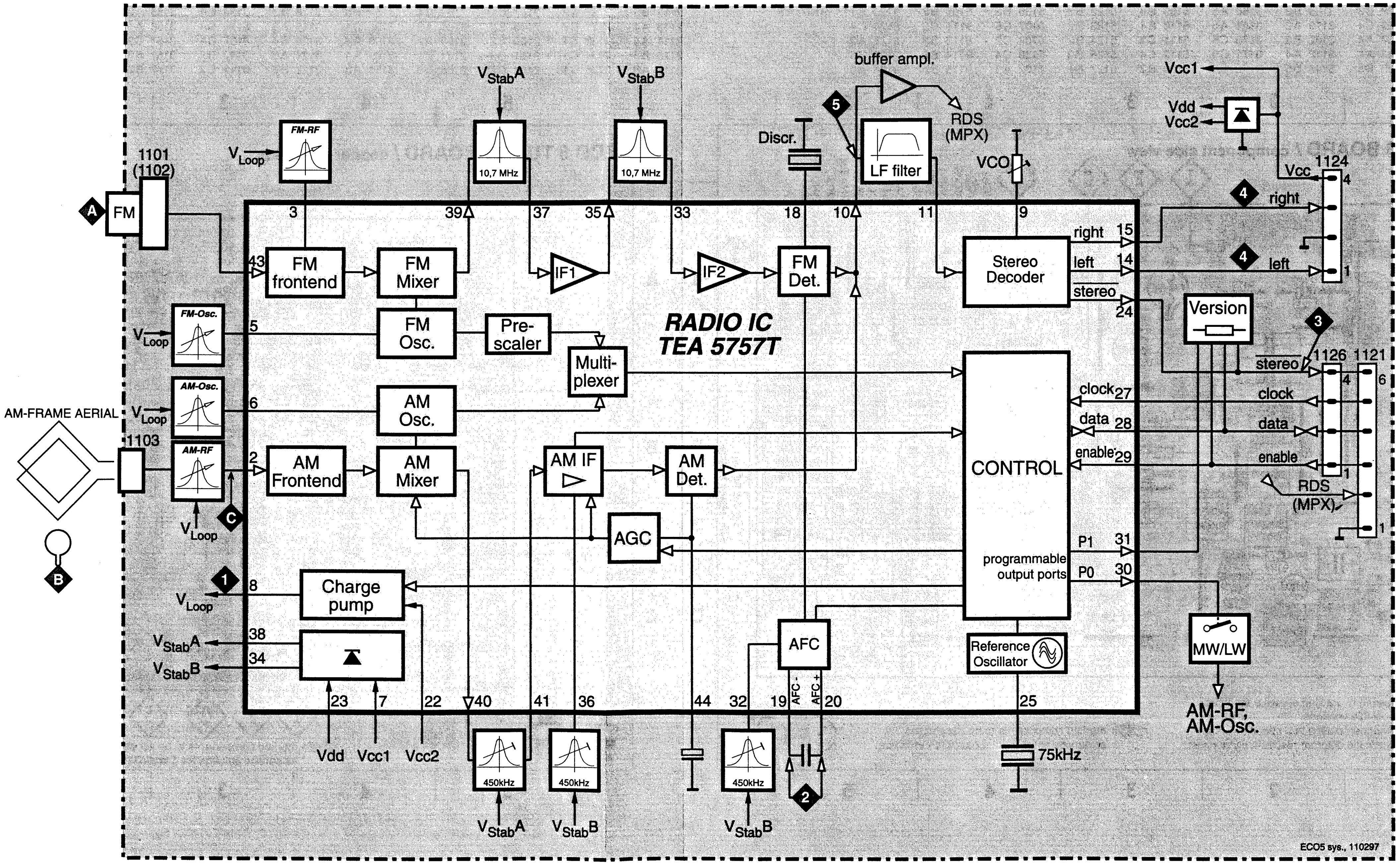
BLOCKDIAGRAM


TUNER BOARD
ECO 5 systems
FM
1101 (1102)
FM-RF
FM-Osc.
AM-Osc.
AM-RF
VLoop
VStabA
VStabB
10,7 MHz
3
39
37
35
33
43
5
6
2
8
38
34
23
7
22
40
41
36
44
32
FM frontend
FM Mixer
FM Osc.
Pre-scaler
Multi-plexer
IF1
IF2
RADIO IC TEA 5757
AM Osc.
AM Frontend
AM Mixer
AM IF
AM Det.
AGC
Charge pump
AM-FRAME AERIAL
1103
Vdd
Vcc1
Vcc2
450kHz
A
B
C
1

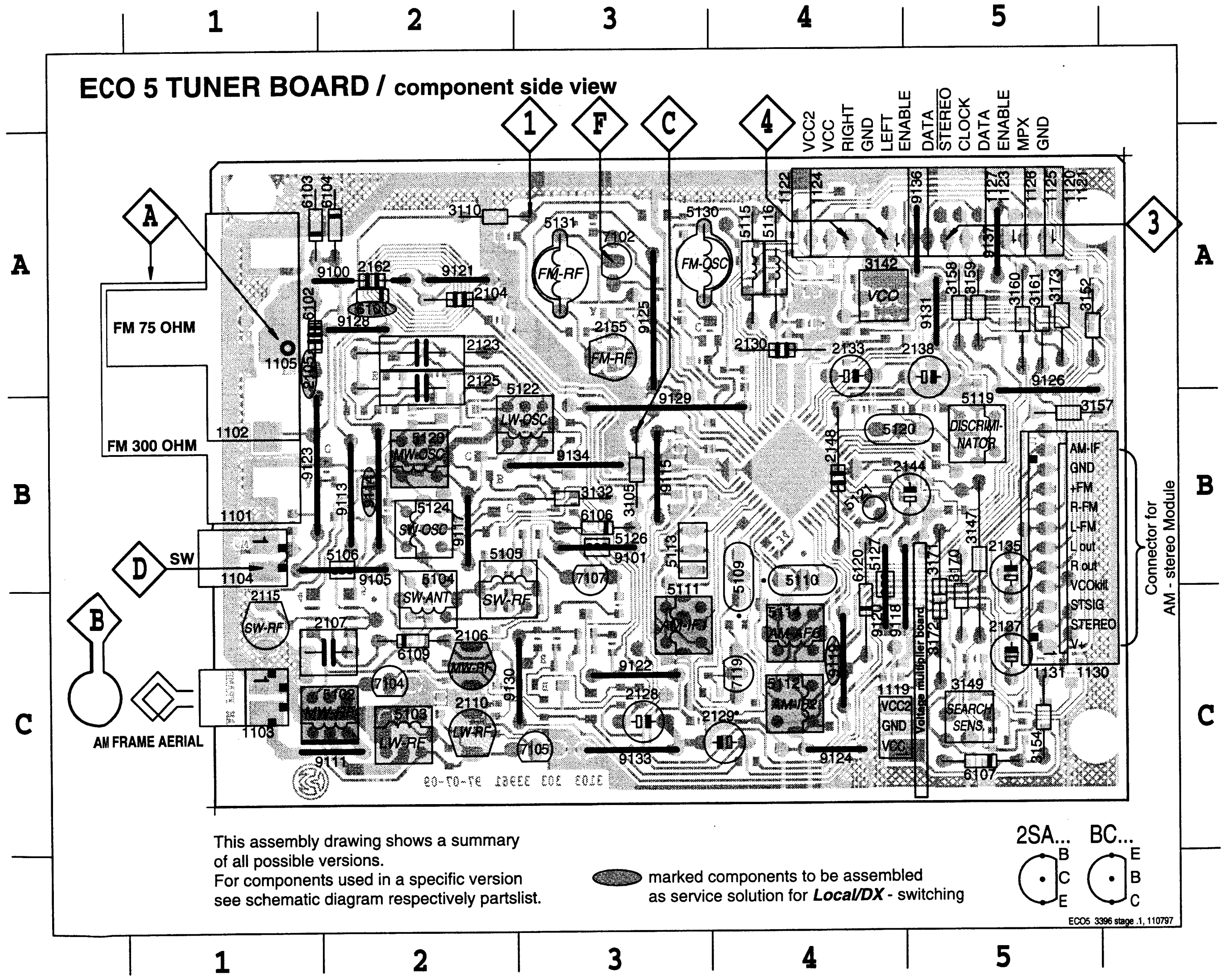
BLOCKDIAGRAM



TUNER BOARD
ECO 5 systems


RADIO IC
TEA 5757T
FM-RF
FM-Osc.
AM-Osc.
AM-RF
V Loop
1101
(1102)
FM
A
B
C
1103
AM-FRAME AERIAL
V Stab A
V Stab B
10,7 MHz
10,7 MHz
Discr.
buffer ampl.
RDS
(MPX)
LF filter
VCO
5
FM
frontend
FM
Mixer
FM
Osc.
Pre-
scaler
Multi-
plexer
AM
Osc.
AM
Frontend
AM
Mixer
AM IF
AM
Det.
AGC
IF1
IF2
FM
Det.
Stereo
Decoder
CONTROL
programmable
output ports
Reference
Oscillator
Charge
pump
AFC
AFC -
AFC +
1
2
3
4
right
left
stereo
clock
data
enable
P1
P0
Version
Vcc1
Vdd
Vcc2
Vcc
1124
1126
1121
RDS
(MPX)
MW/LW
AM-RF,
AM-Osc.
450kHz
450kHz
450kHz
75kHz
Vdd
Vcc1
Vcc2
3
39
37
35
33
18
10
11
9
43
5
6
2
8
38
34
23
7
22
40
41
36
44
32
19
20
25
15
14
24
27
28
29
31
30
ECO5 sys., 110297

1101	A1
1102	A1
1103	C1
1104	B1
1105	A1
1119	C5
1120	A5
1130	B5
1131	B5
2104	A2
2105	A1
2106	C2
2107	C2
2110	C2
2115	C1
2123	A2
2125	A2
2128	C3
2129	C4
2130	A4
2133	A4
2135	B5
2137	C5
2138	A5
2144	B5
2148	B4
2155	A3
2162	A2
3105	B3
3110	A2
3132	B3
3142	A4
3147	B5
3149	C5
3152	A5
3154	C5
3157	B5
3158	A5
3159	A5
3160	A5
3161	A5
3170	C5
3171	C5
3172	C5
3173	A5
5102	C2
5103	C2
5104	C2
5105	B2
5106	B2
5109	B4
5110	B4
5111	C3
5112	C4
5113	B3
5114	C4
5115	A4
5116	A4
5119	B5
5120	B4
5121	B4
5122	B3
5123	B2
5124	B2
5126	B3
5127	B4
5130	A3
5131	A3
6101	A2
6102	A1
6103	A1
6104	A2
6106	B3
6107	C5
6109	C2
6120	C4
7102	A3
7104	C2
7105	C3
7107	B3
7119	C4
9100	A2
9101	B3
9105	B2
9111	C2
9113	B2
9114	B2
9115	B3
9117	B2
9118	B4
9119	C4
9120	B4
9121	A2
9122	C3
9123	B1
9124	C4
9125	A3
9126	B5
9128	A2
9129	B3
9130	C3
9131	A5
9133	C3
9134	B3
9136	A5
9137	A5

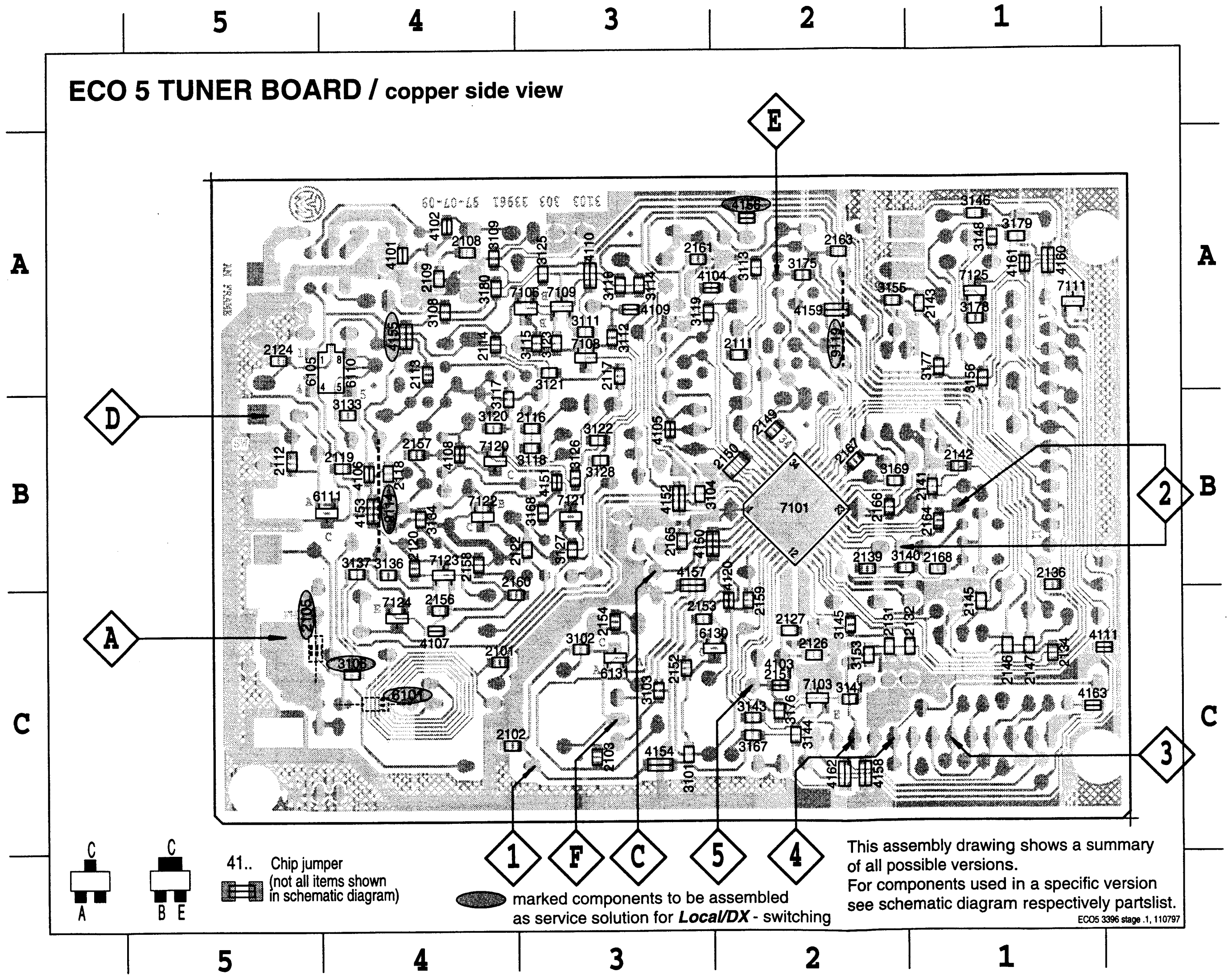

1
2
3
4
5
A
B
C
1
F
C
4
VCC2
VCC
RIGHT
GND
LEFT
ENABLE
DATA
STEREO
CLOCK
DATA
ENABLE
MPX
GND
3
A
FM 75 OHM
FM 300 OHM
D
SW
B
AM FRAME AERIAL
FM-RF
FM-OSC
VCO
LW-OSC
MW-OSC
SW-OSC
SW-ANT
SW-RF
MW-RF
LW-RF
AM-IF
DISCRIMI-NATOR
AM-IF
GND
+FM
R-FM
L-FM
L out
R out
VCOAM
STSIG
STEREO
Connector for AM - stereo Module
VCC2
GND
VCC
Voltage multiplier board
SEARCH SENS.
2SA...
BC...
B
C
E
B
C
E
ECO5 3396 stage .1, 110797

ECO 5 TUNER BOARD / component side view

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram respectively partslist.

marked components to be assembled as service solution for ***Local/DX*** - switching

2101	C4
2102	C4
2103	C3
2108	A4
2109	A4
2111	A2
2112	B5
2113	A4
2114	A4
2116	B3
2117	A3
2118	B4
2119	B4
2120	B4
2122	B3
2124	A5
2126	C2
2127	C2
2131	C2
2132	C1
2134	C1
2136	B1
2139	B2
2141	B1
2142	B1
2143	A1
2145	C1
2146	C1
2147	C1
2149	B2
2150	B2
2151	C2
2152	C3
2153	C3
2154	C3
2156	C4
2157	B4
2158	B4
2159	C2
2160	C4
2161	A3
2163	A2
2164	B1
2165	B3
2166	B2
2167	B2
2168	B1
3101	C3
3102	C3
3103	C3
3104	B3
3106	C4
3108	A4
3109	A4
3111	A3
3112	A3
3113	A2
3114	A3
3115	A3
3116	A3
3117	B4
3118	B3
3119	A3
3120	B4
3121	A3
3122	B3
3123	A3
3125	A3
3126	B3
3127	B3
3128	B3
3133	B4
3134	B4
3136	B4
3137	B4
3140	B2
3141	C2
3143	C2
3144	C2
3145	C2
3146	A1
3148	A1
3153	C2
3155	A2
3156	A1
3167	C2
3168	B3
3169	B2
3175	A2
3176	C2
3177	A1
3178	A1
3179	A1
3180	A4
4101	A4
4102	A4
4103	C2
4104	A2
4105	B3
4106	B4
4107	C4
4108	B4
4109	A3
4110	A3
4111	C1
4120	C2
4150	B2
4151	B3
4152	B3
4153	B4
4154	C3
4155	A4
4156	A2
4157	B3
4158	C2
4159	A2
4160	A1
4161	A1
4162	C1
4163	C1
6105	A4
6110	A4
6111	B4
6130	C2
6131	C3
7101	B2
7103	C2
7106	A3
7108	A3
7109	A3
7111	A1
7120	B4
7121	B3
7122	B4
7123	B4
7124	C4
7125	A1


5
4
3
2
1
A
B
C
E
D
A
2
3
1
F
C
5
4
7101
C
A
C
B E
ECO5 3396 stage .1, 110797

ECO 5 TUNER BOARD / copper side view

41.. Chip jumper (not all items shown in schematic diagram)

marked components to be assembled as service solution for ***Local/DX*** - switching

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram respectively partslist.

TUNER ADJUS

Waverange
VARICAP ALIGNM
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)
MW FM/AM-version, 10kHz grid 530 - 1700kHz
FM/MW-version, 9kHz grid 531 - 1602kHz
LW 153 - 279kHz
MW FM/MW/LW- version, 9kHz gri 531 - 1602kHz
FM IF
FM
FM RF
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)
VCO
FM
AM IF
MW
AM AFC **MW**
AM RF 3)
MW 4) FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz
LW
MW FM/AM-version, 10kHz grid 530 - 1700kHz

Use service test program.

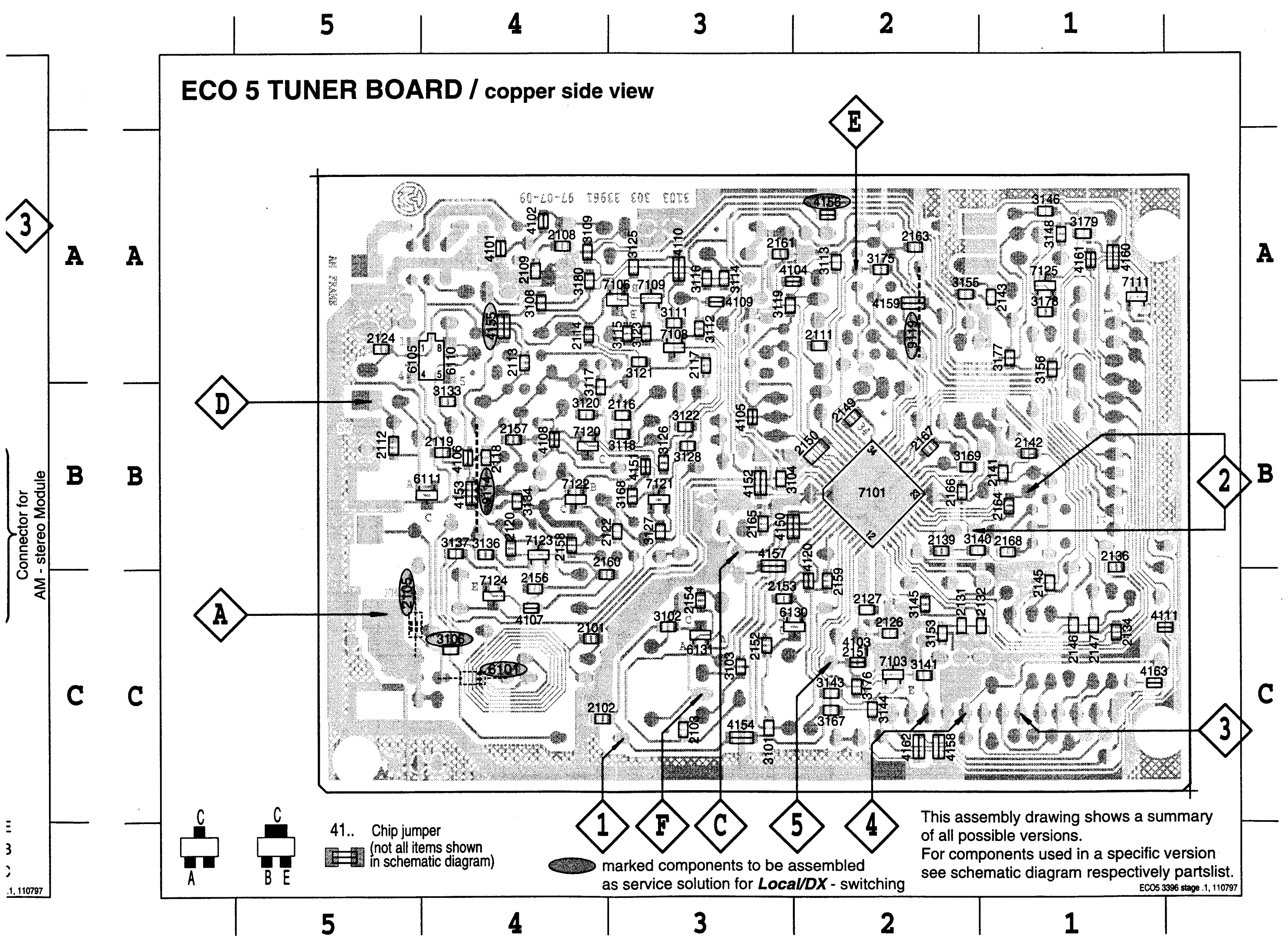
1) If sensitivity of frequency
(input signal: stereo left

3) For AM RF adjustments

↕ Repeat

2101	C4
2102	C4
2103	C3
2108	A4
2109	A4
2111	A2
2112	B5
2113	A4
2114	A4
2116	B3
2117	A3
2118	B4
2119	B4
2120	B4
2122	B3
2124	A5
2126	C2
2127	C2
2131	C2
2132	C1
2134	C1
2136	B1
2139	B2
2141	B1
2142	B1
2143	A1
2145	C1
2146	C1
2147	C1
2149	B2
2150	B2
2151	C2
2152	C3
2153	C3
2154	C3
2156	C4
2157	B4
2158	B4
2159	C2
2160	C4
2161	A3
2163	A2
2164	B1
2165	B3
2166	B2
2167	B2
2168	B1
3101	C3
3102	C3
3103	C3
3104	B3
3106	C4
3108	A4
3109	A4
3111	A3
3112	A3
3113	A2
3114	A3
3115	A3
3116	A3
3117	B4
3118	B3
3119	A3
3120	B4
3121	A3
3122	B3
3123	A3
3125	A3
3126	B3
3127	B3
3128	B3
3133	B4
3134	B4
3136	B4
3137	B4
3140	B2
3141	C2
3143	C2
3144	C2
3145	C2
3146	A1
3148	A1
3153	C2
3155	A2
3156	A1
3167	C2
3168	B3
3169	B2
3175	A2
3176	C2
3177	A1
3178	A1
3179	A1
3180	A4
4101	A4
4102	A4
4103	C2
4104	A2
4105	B3
4106	B4
4107	C4
4108	B4
4109	A3
4110	A3
4111	C1
4120	C2
4150	B2
4151	B3
4152	B3
4153	B4
4154	C3
4155	A4
4156	A2
4157	B3
4158	C2
4159	A2
4160	A1
4161	A1
4162	C1
4163	C1
6105	A4
6110	A4
6111	B4
6130	C2
6131	C3
7101	B2
7103	C2
7106	A3
7108	A3
7109	A3
7111	A1
7120	B4
7121	B3
7122	B4
7123	B4
7124	C4
7125	A1

ECO 5 TUNER BOARD / copper side view



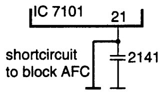
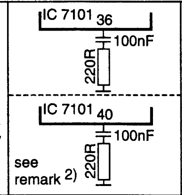
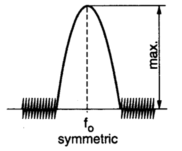
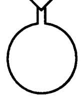
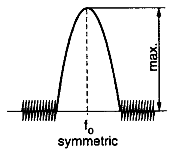
41.. Chip jumper (not all items shown in schematic diagram)

marked components to be assembled as service solution for ***Local/DX*** - switching

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

ECO5 3396 stage .1, 110797

TUNER ADJUSTMENT TABLE (ECO5 FM/MW- and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130	◇1	8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123		6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 50mV continuous wave	◇F	 IC 7101 21 shortcircuit to block AFC 2141	5119	◇2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	◇A	108MHz	2155	◇4	MAX
	87.5MHz (65.81MHz)	mod=1kHz $\Delta f=\pm 22.5kHz$	87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	◇A	98MHz	3142	◇3	152kHz ±1kHz 1)
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with short wire to ground (pin 4)	◇C $\Delta f=\pm 15kHz$ V_{RF} = 3mV	 IC 7101 36 100nF 220R	5111	◇4	 max. f_o symmetric
			IC 7101 40 100nF 220R see remark 2)	5112		
AM AFC **MW**		◇C continuous wave V_{RF} = 10mV		5114	◇2	0 ± 2 mV DC
AM RF 3)						
MW 4) FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	◇B 	1494kHz	2106	◇4	 max. f_o symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz	Δf = ±30kHz V_{RF} as low as possible	1500kHz	2106		
	560kHz		560kHz	5102		

ECO5, discr. coil, 090797

Use service test program. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

1) If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

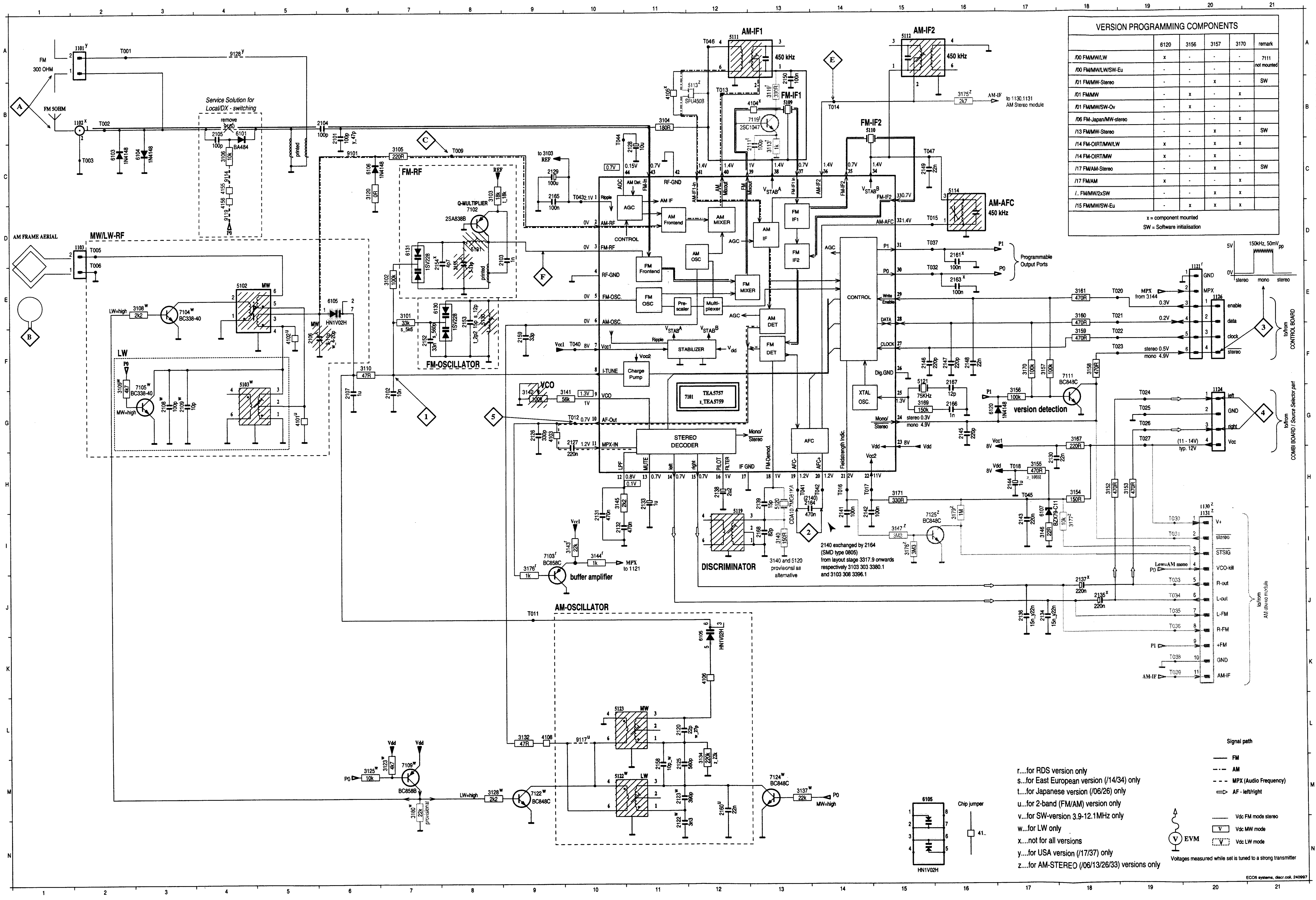
2) RC network serves for damping the IF-filter while adjusting the other one.

3) For AM RF adjustments the original frame antenna has to be used !

4) MW has to be aligned before LW.

↕ Repeat

TUNER BOARD ECO5 / Systems


FM 300 OHM
FM 50HM
AM FRAME AERIAL
MW/LW-RF
LW
Service Solution for Local/DX - switching
FM-RF
Q-MULTIPLIER 7102
FM-OSCILLATOR
VCO
AM-IF1
AM-IF2
FM-IF1
FM-IF2
AM-AFC 450 kHz
7101 TEA5757 z_TEA5759
AGC
AM Frontend
AM MIXER
FM Frontend
FM OSC
Pre-scaler
Multi-plexer
FM MIXER
AM OSC
AM IF
FM IF1
FM IF2
AM DET
FM DET
STABILIZER
Charge Pump
STEREO DECODER
CONTROL
XTAL OSC.
AFC
DISCRIMINATOR
buffer amplifier
AM-OSCILLATOR
version detection
Programmable Output Ports
to/from CONTROL BOARD
to/from COMBI BOARD / Source Selector part
to/from AM stereo module
150kHz, 50mV$_{pp}$
stereo mono stereo
2140 exchanged by 2164 (SMD type 0805) from layout stage 3317.9 onwards respectively 3103 303 3380.1 and 3103 308 3396.1
3140 and 5120 provisional as alternative
Chip jumper
HN1V02H
Signal path
FM
AM
MPX (Audio Frequency)
AF - left/right
EVM
Vdc FM mode stereo
Vdc MW mode
Vdc LW mode
Voltages measured while set is tuned to a strong transmitter
ECO5 systems, discr.coil, 240997

VERSION PROGRAMMING COMPONENTS	6120	3156	3157	3170	remark
/00 FM/MW/LW	x	-	-	-	7111 not mounted
/00 FM/MW/LW/SW-Eu	-	-	-	-	
/01 FM/MW-Stereo	-	-	x	-	SW
/01 FM/MW	-	x	-	x	
/01 FM/MW/SW-Ov	-	x	-	-	
/06 FM-Japan/MW-stereo	-	-	-	x	
/13 FM/MW-Stereo	-	-	x	-	SW
/14 FM-OIRT/MW/LW	x	-	x	x	
/14 FM-OIRT/MW	x	-	x	-	
/17 FM/AM-Stereo	-	-	x	-	SW
/17 FM/AM	x	-	-	x	
/.. FM/MW/2xSW	-	-	x	x	
/15 FM/MW/SW-Eu	-	x	x	x	

x = component mounted
SW = Software initialisation

r....for RDS version only
s...for East European version (/14/34) only
t....for Japanese version (/06/26) only
u...for 2-band (FM/AM) version only
v...for SW-version 3.9-12.1MHz only
w...for LW only
x....not for all versions
y....for USA version (/17/37) only
z....for AM-STEREO (/06/13/26/33) versions only

1101	A 1
1102	B 2
1103	D 2
1121	E20
1124	G20
1126	E20
1130	I20
1131	I20
2101	C 6
2102	G 7
2103	D 9
2104	B 6
2106	F 5
2107	G 6
2108	G 3
2109	G 3
2111	C13
2120	L11
2122	N11
2123	M11
2125	M11
2126	G 9
2127	G10
2128	C11
2129	C 9
2130	H17
2131	I10
2132	I10
2133	H11
2134	J17
2135	J18
2136	J17
2137	J18
2138	H12
2139	H13
2140	H14
2141	H14
2142	H14
2143	I17
2144	H17
2145	G16
2146	F15
2147	F16
2148	F16
2149	C15
2150	B13
2152	F 7
2153	E 8
2154	E 7
2155	D 8
2158	M11
2159	F 9
2160	M12
2161	D16
2163	E16
2164	H14
2165	C 9
2166	G16
2167	F16
2168	I 13
3101	E 7
3102	E 7
3103	C 8
3104	B11
3105	C 7
3108	E 3
3109	F 2
3110	F 6
3113	C13
3119	B13
3120	C 6
3123	M 7
3125	M 6
3128	M 8
3132	L 9
3134	M12
3137	M13
3140	I13
3141	G10
3142	G 9
3143	I10
3144	I10
3145	H10
3146	I17
3147	I15
3152	H18
3153	H19
3154	H18
3155	H17
3156	G17
3157	F17
3158	F18
3159	F18
3160	E18
3161	E18
3167	G18
3169	G15
3170	F17
3171	H15
3175	B16
3176	J 9
3177	I18
3178	I15
3179	I16
3180	M7
4101	G 5
4102	F 5
4103	G 9
4104	B13
4105	B11
4106	K12
4108	L 9
5102	E 4
5103	F 4
5109	B13
5110	B14
5111	A13
5112	A15
5113	B12
5114	C16
5119	I 12
5120	H13
5121	F15
5122	M11
5123	L11
5130	E 8
5131	D 8
6103	C 2
6104	C 3
6105	K12
6105	E 6
6106	C 6
6107	H17
6120	G16
6130	E 7
6131	D 7
7101	G11
7102	D 8
7103	I 9
7104	E 3
7105	F 2
7109	M 7
7111	F18
7119	B13
7122	M 9
7124	M13
7125	I16
9100	B 4
9101	C 6
9117	L10
9128	A 4

MISCELLANEOUS

1101	4822 267 31505	Antenna Socket 300R	
1102	4822 267 10283	Antenna Socket Coax IEC 75R	

CAPACITORS

2101	5322 122 32531	100pF 5% 50V	
2101	4822 126 13692	47pF 1% 63V	for USA
2102	4822 122 33177	10nF 20% 50V	
2103	5322 122 34123	1nF 10% 50V	
2104	4822 122 33195	100pF 10% 50V	
2106	4822 125 50355	Trimmer 4-20pF	for LW version
2106	4822 125 60101	Trimmer 3-11pF 100V	
2107	4822 121 51319	1µF 10% 63V	
2108	5322 122 32531	100pF 5% 50V	for LW version
2109	5322 122 32448	10pF 5% 50V	for LW version
2120	4822 126 13691	27pF 1% 63V	for LW version
2120	5322 122 32658	22pF 5% 50V	
2122	4822 122 33891	3,3nF 10% 63V	for LW version
2125	4822 121 51381	560pF 5% 400V	
2126	5322 122 31863	330pF 5% 50V	
2127	4822 126 13473	220nF +80/-20% 50V	
2128	4822 124 41579	10µF 20% 50V	
2129	4822 124 41584	100µF 20% 10V	
2130	4822 126 11585	22nF+80/- 20% 25V	
2131	4822 122 33325	470nF 16V	
2132	4822 122 33325	470nF 16V	
2131	4822 126 13482	470nF +80/- 20% 16V	
2132	4822 126 13482	470nF +80/- 20% 16V	
2133	4822 124 40242	1µF 20% 63V	
2134	4822 126 13188	15nF 5% 63V	
2134	5322 122 32654	22nF 10% 63V	for USA
2135	4822 124 40746	0,22µF 20% 63V	
2136	4822 126 13188	15nF 5% 63V	
2136	5322 122 32654	22nF 10% 63V	for USA
2137	4822 124 40746	0,22µF 20% 63V	
2138	4822 124 41576	2,2µF 20% 50V	
2139	4822 126 14236	50V 15pF 5%	
2140	4822 121 51252	470nF 5% 63V	
2141	4822 126 10002	100nF 20% 25V	
2142	4822 126 10002	100nF 20% 25V	
2143	4822 126 13473	220nF +80/-20% 50V	
2144	4822 124 40242	1µF 20% 63V	
2145	4822 122 33575	220pF 5% 50V	
2146	4822 122 33575	220pF 5% 50V	
2147	4822 122 33575	220pF 5% 50V	
2148	4822 126 11585	22nF+80/- 20% 25V	
2149	5322 122 32654	22nF 10% 63V	
2150	4822 122 31947	100nF 20% 63V	
2152	5322 116 80853	560pF 5% 63V	for East. Europe
2152	4822 126 12105	33nF 5% 63V	
2153	4822 122 32139	12pF 2% 63V	for East. Europe
2153	4822 122 32504	15pF 2% 63V	
2155	4822 125 60101	Trimmer 3-11pF 100V	
2158	5322 122 32448	10pF 5% 50V	for LW version
2159	5322 122 32659	33pF 5% 50V	
2160	5322 122 32654	22nF 10% 63V	
2161	4822 126 10002	100nF 20% 25V	
2163	4822 126 10002	100nF 20% 25V	
2164	4822 126 13482	470nF +80/- 20% 16V	
2165	4822 126 10002	100nF 20% 25V	
2166	5322 122 34123	1nF 10% 50V	
2167	4822 122 32139	12pF 2% 63V	
2168	4822 126 13695	82pF 1% 63V	

RESISTORS

3101	4822 051 20562	5k6 5% 0,1W	for East. Europe
3101	4822 051 20333	33k 5% 0,1W	
3102	4822 051 20104	100k 5% 0,1W	
3103	4822 117 10965	18k 1% 0,1W	
3104	4822 117 11448	180R 1% 0,1W	
3105	4822 116 83872	220R 5% 0,5W	
3108	4822 117 11449	2k2 1% 0,1W	for LW version
3109	4822 051 20472	4k7 5% 0,1W	for LW version
3110	4822 116 52195	47R 5% 0,5W	
3120	4822 051 20008	0R Jumper 0805	
3123	4822 051 20472	4k7 5% 0,1W	for LW version
3125	4822 117 10833	10k 1% 0,1W	for LW version
3128	4822 117 11449	2k2 1% 0,1W	for LW version
3132	4822 116 52195	47R 5% 0,5W	
3134	4822 051 20224	220k 5% 0,1W	
3137	4822 051 20223	22k 5% 0,1W	for LW version
3140	4822 051 20008	0R Jumper 0805	
		5120=CDA10.7MG40K	
3140	4822 117 10353	150R 1% 0,1W	
		5120=CDA10.7MG61KA	
3141	4822 051 20563	56k 5% 0,1W	
3142	4822 100 11163	Trimmer 100k 30% 0,1W	
3143	4822 051 20223	22k 5% 0,1W	for RDS version
3144	4822 051 10102	1k 2% 0,25W	for RDS version
3145	4822 117 11449	2k2 1% 0,1W	
3146	4822 051 20229	22R 5% 0,1W	
3152	4822 116 83883	470R 5% 0,5W	
3153	4822 051 20471	470R 5% 0,1W	
3154	4822 116 83868	150R 5% 0,5W	
3155	4822 051 20471	470R 5% 0,1W	
3156	4822 051 20104	100k 5% 0,1W	for /21/30/33 only
3157	4822 116 52234	100k 5% 0,5W	for East. Europe
3158	4822 116 83883	470R 5% 0,5W	
3159	4822 116 83883	470R 5% 0,5W	
3160	4822 116 83883	470R 5% 0,5W	
3161	4822 116 83883	470R 5% 0,5W	
3167	4822 117 11503	220R 1% 0.1W	
3169	4822 051 20154	150k 5% 0,1W	
3170	4822 116 52234	100k 5% 0,5W	
3171	4822 116 52219	330R 5% 0,5W	
3176	4822 051 10102	1k 2% 0,25W	for RDS version
4101	4822 051 20008	0R Jumper 0805	for 2-Band only
4102	4822 051 20008	0R Jumper 0805	for 2-Band only
4103	4822 051 20008	0R Jumper 0805	
4104	4822 051 20008	0R Jumper 0805	
4105	4822 051 20008	0R Jumper 0805	
4106	4822 051 20008	0R Jumper 0805	
4108	4822 051 20008	0R Jumper 0805	
4111	4822 051 20008	0R Jumper 0805	
4120	4822 051 20008	0R Jumper 0805	
4150	4822 051 10008	0R Jumper 1206	
4151	4822 051 20008	0R Jumper 0805	
4152	4822 051 10008	0R Jumper 1206	
4153	4822 051 10008	0R Jumper 1206	
4154	4822 051 10008	0R Jumper 1206	
4155	4822 051 10008	0R Jumper 1206	
4156	4822 051 20008	0R Jumper 0805	
4157	4822 051 10008	0R Jumper 1206	
4158	4822 051 10008	0R Jumper 1206	
4159	4822 051 10008	0R Jumper 1206	
4162	4822 051 10008	0R Jumper 1206	

COILS & FILTERS

5102	4822 157 71634	MW RF Coil	
5103	4822 157 71635	LW RF Coil	for LW version
5109	4822 242 70665	Ceram Filter 10,7MHz	
5110	4822 242 70665	Ceram Filter 10,7MHz	
5111	4822 158 60511	AM-IF Filter 450kHz	
5112	4822 157 70302	AM-IF Filter 450kHz	
5114	4822 157 70302	AM-IF Filter 450kHz	
5119	4822 157 11443	Discriminator 10,7MHz	
5120	4822 242 82065	Cer. Disc. 10,7MG40K	
5120	4822 242 10251	Cer. Disc.10,7MG61KA-TF21	
5121	4822 242 10261	Quartz 75kHz	
5122	4822 157 60517	Osc. Coil LW	for LW version
5123	4822 157 60517	Osc. Coil MW	
5130	4822 156 30947	RF-Coil 1.5T	
5131	4822 156 30947	RF-Coil 1.5T	

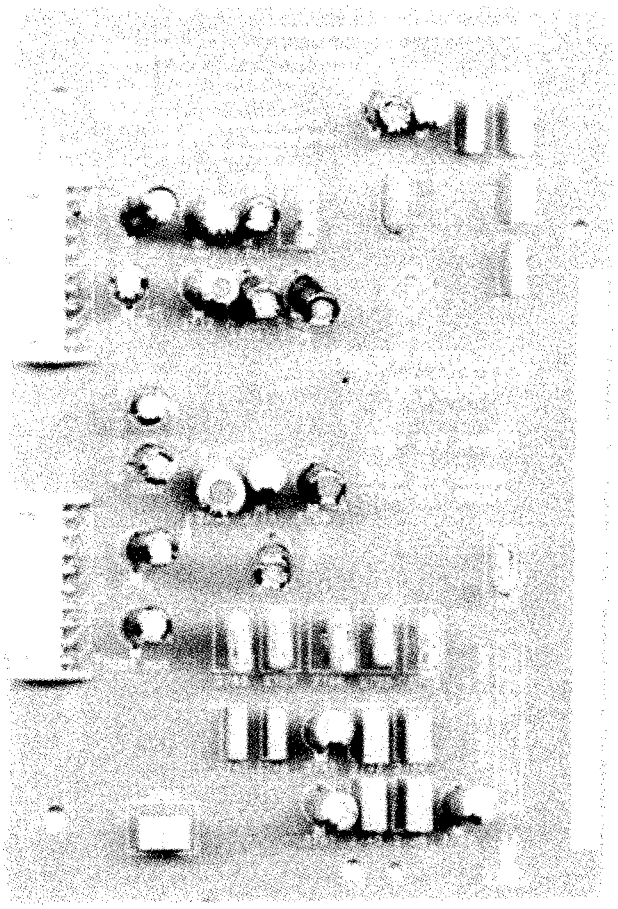
DIODES

6103	4822 130 30621	1N4148	
6104	4822 130 30621	1N4148	
6105	4822 130 83075	HN1V02H-B	
6106	4822 130 30621	1N4148	
6107	4822 130 34488	BZX79-B11	
6120	4822 130 30621	1N4148	not for /21/30/33
6130	4822 130 82833	1SV228	
6131	4822 130 82833	1SV228	

TRANSISTORS & INTEGRATED CIRCUITS

7101	4822 209 90924	TEA5757H/V1	
7102	4822 130 60093	2SA838B	
7103	4822 130 42513	BC858C	for RDS version
7104	5322 130 44779	BC338-40	for LW version
7105	5322 130 44779	BC338-40	for LW version
7109	5322 130 41983	BC858B	for LW version
7111	5322 130 42136	BC848C	
7122	5322 130 42136	BC848C	for LW version
7124	5322 130 42136	BC848C	for LW version

Note: Only the parts mentioned in this list are normal service spare parts.



DOLBY PROLOGIC BOARD

TABLE OF CONTENTS

Test description 8-2
Circuit diagram 8-5
Component layout 8-6
Partslist 8-7

DOLBY PROLOGIC TEST DESCRIPTION

- The intention of this description is to explain the most important performance measurements for **DPL** (**D**olby **P**ro-**L**ogic) sets for service.

- Test instruments (recommended) :
  - Dolby Prologic test CD 4822 395 10216
  - AC mv meters (4x) L, C, R, S
  - Oscilloscope (double beam)
  - Distortion meter
  - CD player.

WARNING: Be sure that the ground connection (-) of each instrument is not connecteded with the safety earth ⊥ connection. To avoid damage to output amplifiers (balance type) Use only cinch (input) ground connection

STARTING CONDITION :

- Replace the loudspeakers for all four output amplifiers with loud resistors according the output impedance for each amplifier (or use 8 Ω as standard loudresistor).
- Set volume to min. position
- Set Bass + Treble at 0 db .
- Select Surround <Prologic> .
- Select "LARGE" size for Center channel.
- Set time delay in Surround channel at 20 msec.
- Dolby Prologic test CD in CD player.

SERVICE TEST DESCRIPTION

Test 1 : *Output and balance setting for all four channels*
Select track 2 :
Adjust L, C, R and S for ≈ 1W output on the loudresistor with master volume. Adjust with L/R balance and Centre/Surround "TRIM" all four channels to equal level (equal meter readings)
Note: 1Watt output corresponds with 2.83V across 8 Ω
$P = U^2/R \rightarrow U = \sqrt{P \times R} = \sqrt{1 \times 8} = 2{,}83V$

Test 2 : *Frequency response for Left and Right channel*
Requirement : -3 dB points at ≤ 50 Hz and ≥ 15 kHz
Select track 3:
measure (and note) the overall gain of Left channel across the load resistor.
Select track 4:
measure (and note) the overall gain on Right channel across the load resistor.

Test 3 : *Frequency response for Center channel*
2 possibilitie :
1- Center size "LARGE" requirements : -3 dB at ≤ 50 Hz and ≥ 15 kHz (same as L/R requirements)
2- Center size "SMALL" requirements : -3 dB point at ± 100 Hz and ≥ 15 kHz (the difference is the roll-off behaviour of the bass frequencies).
Select track 5 :
measure (and note) the overall gain of Center channel across the load resistor in "LARGE" size (only in sets with this option) and repeat this measurement in "SMALL" size.

Test 4 : *Frequency response for Surround channel*
Surround requirements : -3 dB point at ≤ 100 Hz and ± 7 kHz (6 kHz ... 8 kHz)
The difference is the roll-off behaviour of the high treble frequencies.
Select track 6 :
measure (and note) the overall gain of Surround channel across the loud resistor.

Test 5 : *Modified Dolby B type NR decoding freq. response of the Surround channel*
Requirement : Roll off behaviour at ± 5 kHz related to 100 Hz. In this case use 100 Hz as 0 dB reference gain.
Select track 14:
measure (and note) the overall gain of Surround channel across the load resistor.
Note : The output level on track 14 = -35 dB below the 1W output reference of the Surround channel.

Test 6 : *Total harmonic distortion measurements for Left, Center, Right, Surround channels for 1 Watt output*
Note : If necessary use a special CD test filter 20 Hz ... 20 kHz between the output channel and the distortion meter to prevent spurrious products out of audio waves (> 20 kHz) from to the CD player in test.
Select track 3 :
Measure distortion at 1 kHz across the Left channel.
Output load resistor : requirement THD < 0,3 %
Select track 4 :
Measure distortion at 1 kHz across the Right channel.
Output load resistor : requirement THD < 0,3 %
Select track 5 :
Measure distortion at 1 kHz across the Center channel.
Output load resistor : requirements THD < 0,3 %
Center size "LARGE" (if exists) and repeat for center size "SMALL"
Select track 6 :
Measure distortion at 1 kHz across the Surround channel load resistor.
Note : time delay setting = 20 msec.
Requirement THD = < 0,5 %

Test 7: *Signal to noise measurements for Left output amplifier*
Select track 3 :
Use 1W output at 1 kHz on the Left channel output loud resistor as 0 dB reference.
Select track 13 :
(silence) and measure the S/Nratio.--->with ccir/arm filter
Requirements for Left channel ≤ -65 dB

Test 8 : *Signal to noise measurements for Right output amplifier*
Select track 4 :
Use 1W output at 1 kHz on the Right channel output loud resistor as 0 dB reference.
Select track 13 :
(silence) and measure the S/N ratio.
Requirement for Right channel ≤ -65 dB

Test 9 : *Signal to noise measurements for Center output amplifier*
Select track 5 :
Uuse 1W output at 1 kHz on the Center channel (size "SMALL" or "LARGE")
Select track 13 :
(silence) and measure the S/N ratio.
Requirement for Center channel (size "SMALL" or "LARGE") ≤ -65 dB

Test 10 : *Signal to noise measurements for Surround output amplifier*
Select track 6 :
Use 1W output at 1 kHz on the Surround channel output loud resistor as 0 dB reference.
Select track 13 :
(silence) and measure the S/N ratio.
Requirement for Surround channel ≤ -55 dB (in all positions between 15 msec ... 30 msec in sets with variable time delay).

Cross-talk (channel separation) between adjacent and opposite channels
2 possibilities :
1- Centre size "LARGE" (use 1 kHz tone)

Test 11a:
Select track 3 :
For 1 kHz in Left channel and measure the crosstalk in Center, Right, Surround.
Requirement : < -25 dB

Test 12a :
Select track 4 for 1 kHz in Right channel and measure the crosstalk in Surround , Left, Center.
Requirement : < -25 dB

Test 13a :
Select track 5 :
For 1 kHz in Center channel and measure the crosstalk in Left, Right, Surround.

Requirement : < -25 dB

Test 14a :
Select track 6 :
For 1 kHz in Surround channel and measure the crosstalk in Left, Center, Right.
Requirement : < -25 dB

2- Centre mode "normal" (use 3 kHz or 1 kHz tone)

Test 11b :
Select track 3 :
For 3 kHz in Left channel and measure the crosstalk in Center, Right, Surround
Requirement : < -25 dB

Test 12b :
Select track 4 :
For 3 kHz in Right channel and measure the crosstalk in Surround, Left, Center
Requirement : < -25 dB

Test 13b :
Select track 5 :
For 3 kHz in Centre channel and measure the crosstalk in Left, Right, Surround
Requirement : < -25 dB

Test 14b :
Select track 6 :
For 1 kHz in Surround channel and measure the crosstalk in Left, Center, Right
Requirement : < -25 dB

Inputs overload test (headroom to visible clipping)

General :
Before starting these tests set Master Volume -15 dB lower to make a new output reference (1W on loudresistors).
Requirement : check on scope for no visible signal clipping or measure THD <1,5 %

Test 15 :
Select track 7 :
Check the Left output signal between 20 Hz ... 20 kHz

Test 16 :
Select track 8 :
Check the Right output signal between 20 Hz ... 20 kHz

Test 17 :
Select track 9 :
Check the Center output signal
CENTER "SMALL" between 100 Hz ... 20 kHz
CENTER "LARGE" between 20 Hz ... 20 kHz

Test 18 :
Select track 11 :
Check the Surround output signal between 50 Hz ... 7 kHz

Test 19 : *Center Mode Check*
Select Center size "SMALL".
a - Select track 5 at 1 kHz :
Adjust the Center output again with master volume for 1W output as 0 dB reference.
b - Select on track 5 the 100 Hz :
Signal to check the roll-off behaviour at -3 dB on the Center output
c - Select on track 5 the 50 Hz :
Signal and measure on the Left and Right output channels.
The lost 50 Hz signal on the Center output is equally splitted and added to the L and R channels.

Test 20 : *Center Mode Check*
Select Center size "LARGE"
Repeat test 19 a,b and c
The difference is no roll off behaviour at 100 Hz (Center) and no splitted bass (50 Hz signal) added to L and R.

Test 21 : *Center Mode Check*
Select Center mode phantom = Center speaker "No"
Select track 5 (20 Hz ... 20 kHz) :
No output signals on the Center output or at least minimum -40 dB related to 1W outputs.
Measure now on the Left and Right output channels : the lost Center signals are equally splitted and added to these left and right channels (- 3 dB)

Test 22 : *3 CH mode control*
Select Front 3 stereo (Rear speaker "No")
Select track 6 (100 Hz ... 7 kHz):
No output signals on the Surround output channel or at least minimum -40 dB related to 1W output.
Measure now at the Left and Right output channels : the lost Surround signals are equally splitted and added to the Left and Right output channels (-3 dB)

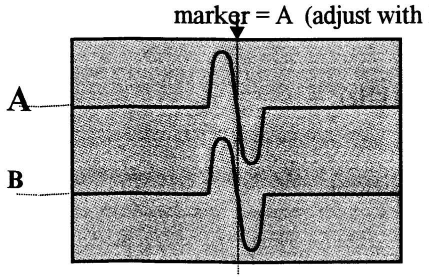
Test 23 : *2 CH mode control (stereo)*
Select Surround "OFF"
Select track 5 :
No output on Centre output channel
Select track 6 :
No output on Surround output channel

Test 24 : *Time delay control in Surround channel*

- Principle description encoded burst signal spots (see fig. 1)
  1- Tone burst 1 kHz during 1 msec with interval time at 20 msec are given at the same time to the L_t; R_t inputs. (in phase 0°)
  2- The next tone burst is given at the same time to the L_t R input, but in reverse phase to the R_t input (180°).
  These 2 tone bursts are repeated continuously during 2 minutes.
- Principle description decoded signal spots in Center/Surround channel
  - In case of 20 msec time delay mode the results are shown in fig. 1 in Center and Surround channel.
    The center spots in Center channel can be used as "Marker" spots (trigger signal) → repeated every 40 msec.
    The delayed surround spots occur at the same time as the center spots (markers)
  - When time delay mode is changed to 15 msec the delayed surround spots move to the left with respect to the centre mark spots.
  - When time delay mode is changed to 25 msec or 30 msec the delayed surround spots move to the right with respect to the center spots.
  - In case of no time delay ! (faulty condition) the surround spots fall just between 2 center markers spots (20 msec)
- **How to check with a double beam scope**
  WARNING: Be sure that the ground connection (-) of each instrument is not connecteded with the safety earth ⊥ connection. To avoid damage to output amplifiers (balance type) Use only cinch (input) ground connection

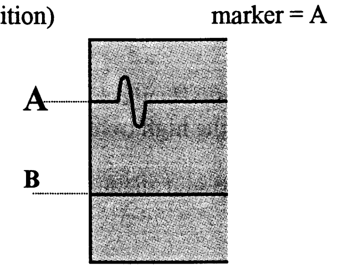
- Select Pro Logic size "LARGE" or "SMALL" (phantom in case of no Center output.)
- Select 20 msec time delay in Surround channel.
- Adjust scope at 5 msec/division and trigger at A input
- Connect input A to Center channel (or L or R in case of phantom mode)
- Connect input B to Surround channel
- Adjust trigger level and the X position to set pulse A in the middle of the scope . see fig.2 (if L or R used in phantom mode choose the largest (amplitude) pulse. see fig 3

Select track 24:
Pulse A = 20 msec marker
Pulse B = delayed surround signal pulse



20msec time delay

Fig 2



20msec in case of phantom mode

Fig 3

Change time delay to 15 msec (only in versions with variable delay).
he surround pulse in channel B moves to the left with respect to side from center marker (channel A) position.
Change time delay to 25 or 30 msec (versions with variable delay).
The surround pulse in channel B moves to the right with respect to center marker (channel A) position.

Time delay with track 6

Alternative methode :
The functional operation of the time delay can be made visible with a lisajous figure, with an single beam scope.
Connect X-direction on Surround output
Connect Y-direction on Left or Right output/input.
Note : be careful and use only 1 ground connected to scope.
Select track 6 (surround test) :
Make the lisajous figure visible on the scope (amplitude adjust) see fig. 4

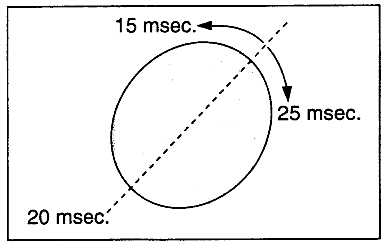

15 msec.
25 msec.
20 msec.

Fig 4 Lisajous out of phase
Time delay = OK

Note : in sets with variable time delay the ellipse of the lisajous figure must be always open. Changing the time delay changes the direction of the circle accordingly.

CHANNEL modes:

Surround OFF (Stereo) 2 channel mode
Signal on :L out (2703) and R out (2704)

Surround ON
-Prologic 4 channel mode → all four outputs are used
Signal on : L out (2703), R out (2704), Center out (2705), Surround (2706).

-Front 3 stereo → No surround speaker available
The surround information is equelly to the left and right outputs.
Signal on : L out (2703), R out (2704), Center out (2705).

-HALL
Signal on : L out (2703), R out (2704), Surround (2706).

Subwoufer out. not in all versions
Signal on : Subwoofer out (2788).

(....) as indicated on the component side of the DPL decoder board.

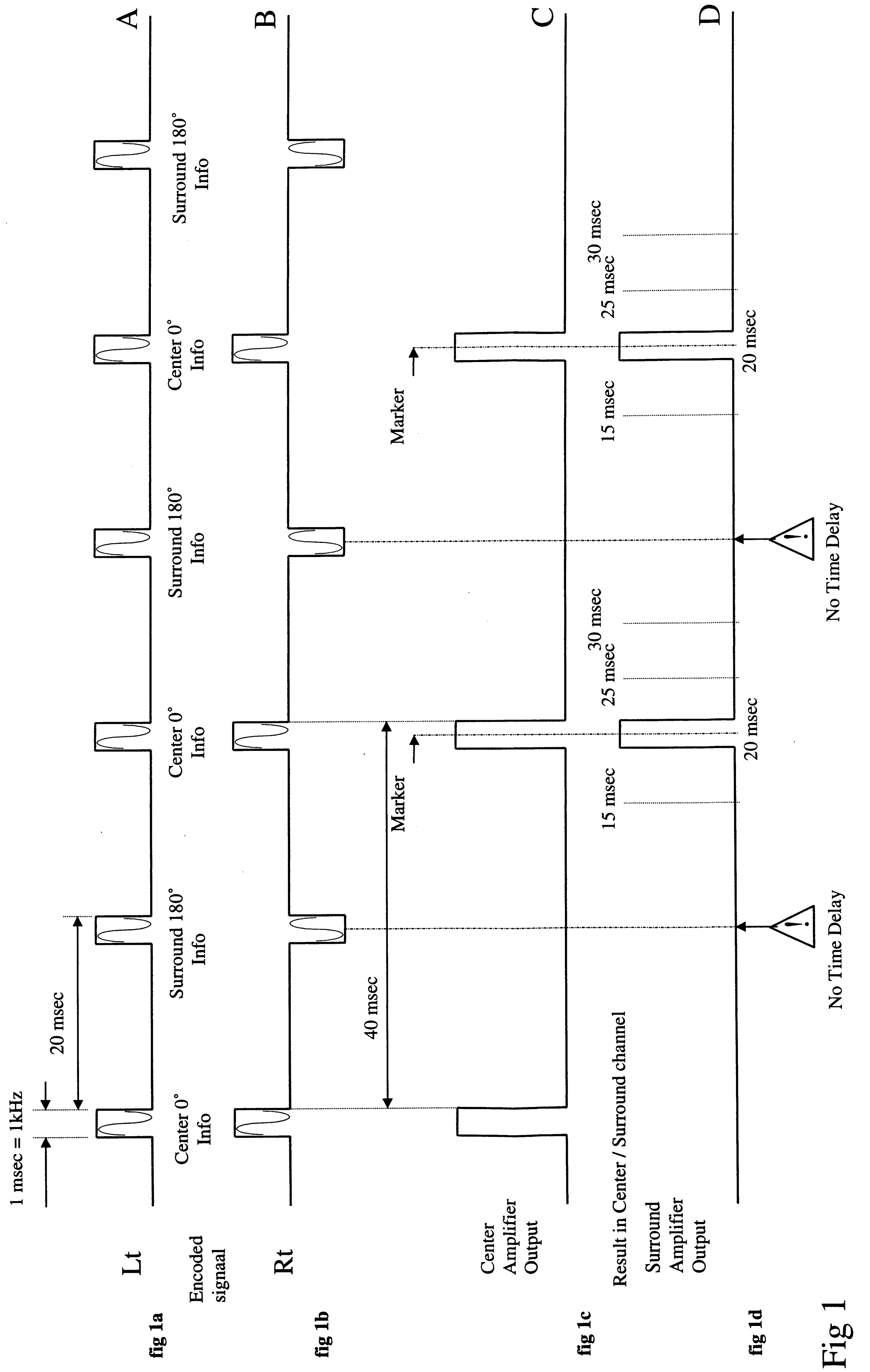
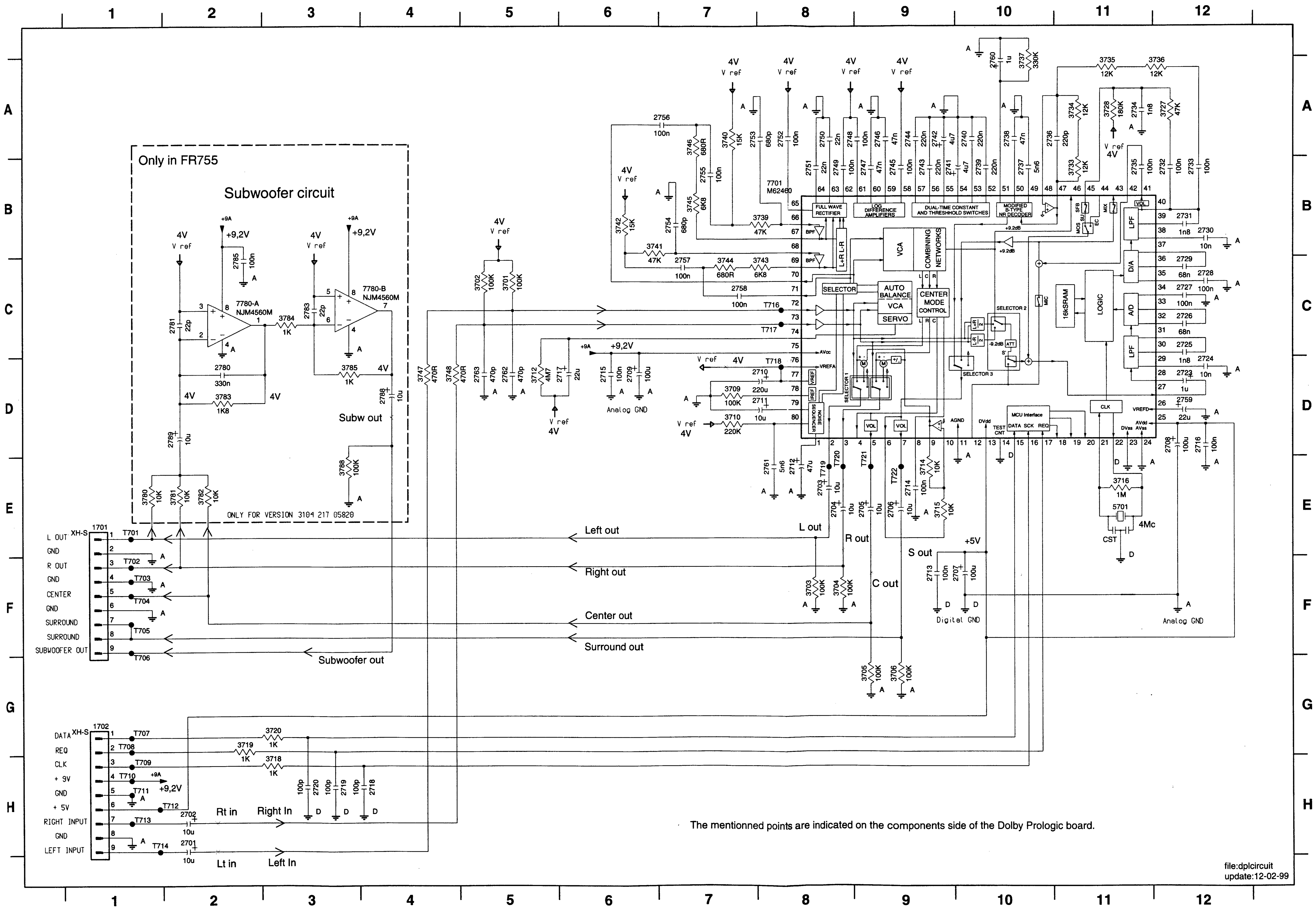

A
B
C
D
Surround 180° Info
Center 0° Info
Surround 180° Info
Center 0° Info
Surround 180° Info
Center 0° Info
Marker
Marker
30 msec
25 msec
15 msec
20 msec
30 msec
25 msec
15 msec
20 msec
No Time Delay
No Time Delay
20 msec
40 msec
1 msec = 1kHz
Lt
Encoded signaal
Rt
Center Amplifier Output
Result in Center / Surround channel
Surround Amplifier Output
fig 1a
fig 1b
fig 1c
fig 1d

Fig 1

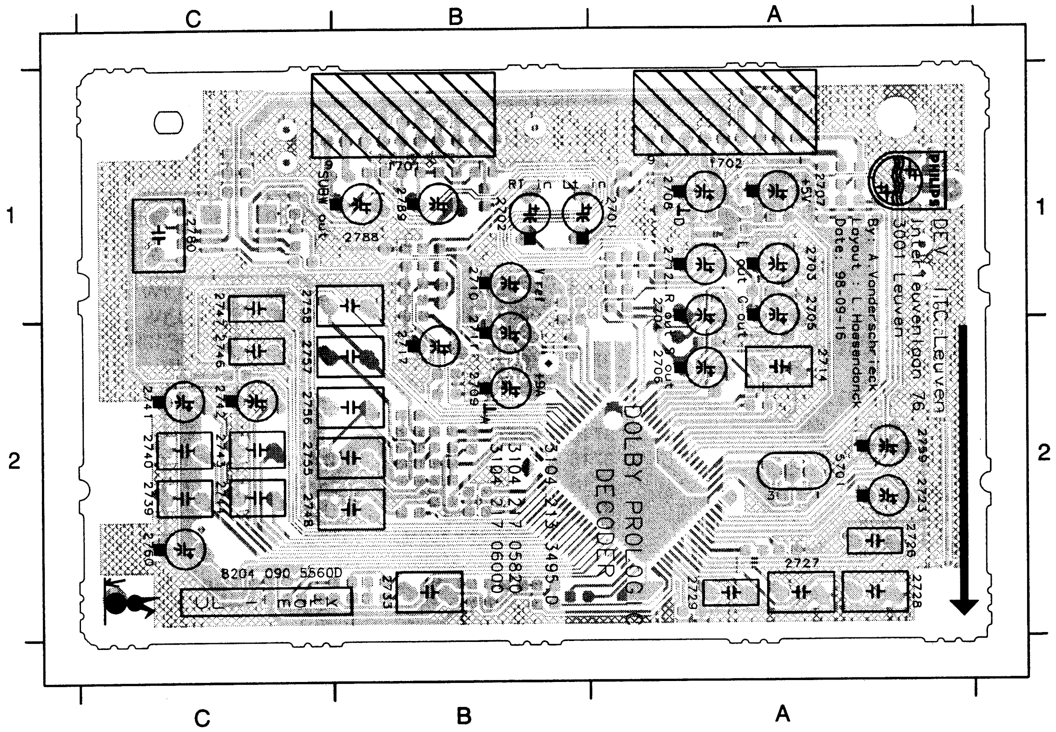
DOLBY PROLOGIC - CIRCUIT DIAGRAM


Only in FR755
Subwoofer circuit
7780-A NJM4560M
7780-B NJM4560M
+9,2V
4V V ref
Subw out
ONLY FOR VERSION 3104 217 05820
7701 M62460
FULL WAVE RECTIFIER
LOG DIFFERENCE AMPLIFIERS
DUAL-TIME CONSTANT AND THRESHOLD SWITCHES
MODIFIED B-TYPE NR DECODER
VCA
COMBINING NETWORKS
SELECTOR
AUTO BALANCE
SERVO
CENTER MODE CONTROL
16kSRAM
LOGIC
LPF
D/A
A/D
CLK
MCU interface
DATA SCK REQ
SELECTOR 1
SELECTOR 2
SELECTOR 3
NOISE SEQUENCER
VOL
AGND
DVdd
DVss
AVdd
AVss
VREFD
5701 4Mc CST
1701 XH-S
L OUT
GND
R OUT
CENTER
SURROUND
SUBWOOFER OUT
1702 XH-S
DATA
REQ
CLK
+ 9V
+ 5V
RIGHT INPUT
LEFT INPUT
Left out
Right out
Center out
Surround out
Subwoofer out
L out
R out
S out
C out
Rt in
Right In
Lt in
Left In
Digital GND
Analog GND
+5V
file:dplcircuit
update:12-02-99

The mentionned points are indicated on the components side of the Dolby Prologic board.

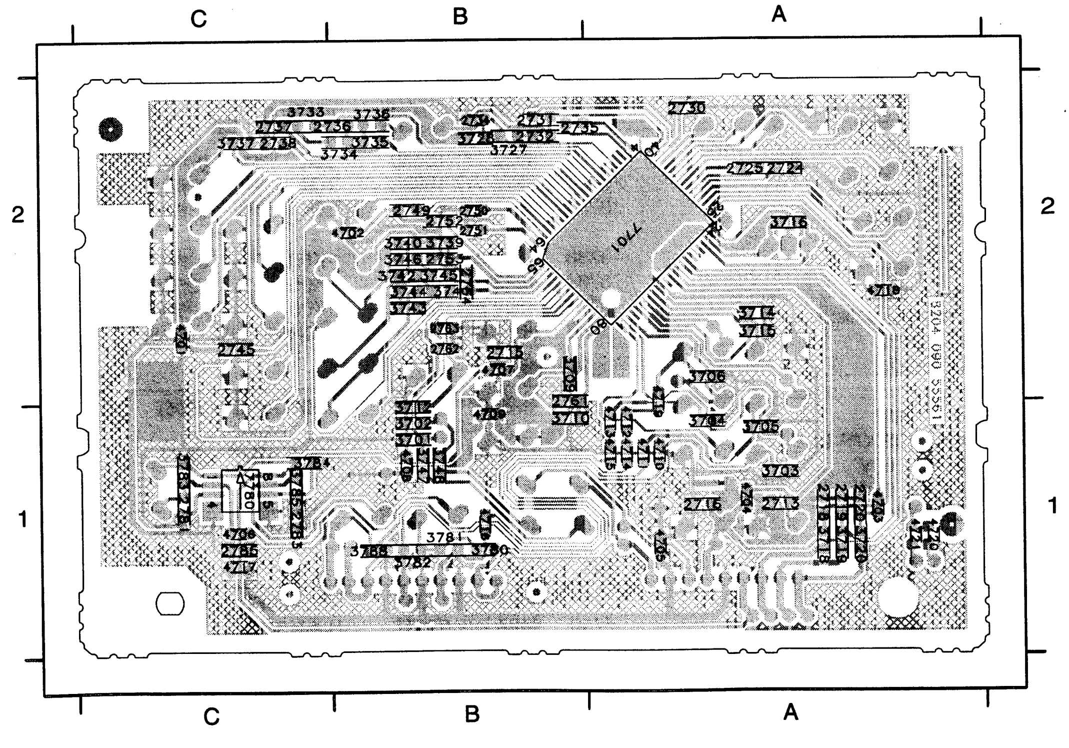
1701	E1
1702	G1
2701	H2
2702	H2
2703	E8
2704	E8
2705	E9
2706	E9
2707	F10
2708	D12
2709	D6
2710	D8
2711	D8
2712	E8
2713	F9
2714	E9
2715	D6
2716	D12
2717	D6
2718	H4
2719	H3
2720	H3
2723	D12
2724	D12
2725	C12
2726	C12
2727	C12
2728	C12
2729	C12
2730	B12
2731	B12
2732	B12
2733	B12
2734	A11
2735	B11
2736	A10
2737	B10
2738	A10
2739	B10
2740	A10
2741	B9
2742	A9
2743	B9
2744	A9
2745	B9
2746	A9
2747	B9
2748	A8
2749	B8
2750	A8
2751	B8
2752	A8
2753	A7
2754	B7
2755	B7
2756	A7
2757	C7
2758	C7
2759	D12
2760	A10
2761	E8
2762	D5
2763	D5
2780	D2
2781	C2
2783	C3
2785	C2
2788	D4
2789	D2
3701	C5
3702	C5
3703	F8
3704	F8
3705	G9
3706	G9
3708	D12
3709	D7
3710	D7
3712	D5
3714	E9
3715	E9
3716	E11
3718	H3
3719	G2
3720	G3
3727	A12
3728	A11
3733	B11
3734	A11
3735	A11
3736	A12
3737	A10
3739	B8
3740	A7
3741	B6
3742	B6
3743	C8
3744	C7
3745	B7
3746	A7
3747	D4
3748	D4
3780	E1
3781	E2
3782	E2
3783	D2
3784	C3
3785	D3
3788	E3
4720	G12
4721	G12
5701	E11
7701	B8
7780-A	C2
7780-B	C4
T701	E1
T702	F1
T703	F1
T704	F1
T705	F1
T706	F1
T707	G1
T708	G1
T709	H1
T710	H1
T711	H1
T712	H1
T713	H1
T714	H1
T716	C8
T717	C8
T718	D8
T719	E8
T720	E8
T721	E9
T722	E9
T723	G12
T724	H12
T725	H12

DOLBY PROLOGIC BOARD - COMPONENT VIEW


C
B
A
1
2
PHILIPS
DEV. I.C. Leuven
Interleuvenlaan 76
3001 Leuven
By: A. Vanderschrieck
Layout : L. Hoessendonck
Date: 98-09-16
DOLBY PROLOGIC DECODER
SUBW out
RT in LT
L out
C out
R out
S out
+5V
1701
1702
5701
2701
2702
2703
2704
2705
2706
2707
2708
2709
2710
2711
2712
2714
2717
2723
2726
2727
2728
2729
2733
2739
2740
2741
2742
2743
2744
2746
2747
2748
2755
2756
2757
2758
2759
2760
2780
2788
2789
8204 090 5560D
UL - mark

1701	B1
1702	A1
2701	A1
2702	B1
2703	A1
2704	A1
2705	A1
2706	A2
2707	A1
2708	A1
2709	B2
2710	B1
2711	B2
2712	A1
2714	A2
2717	B2
2723	A2
2726	A2
2727	A2
2728	A2
2729	A2
2733	B2
2739	C2
2740	C2
2741	C2
2742	C2
2743	C2
2744	C2
2746	C2
2747	C1
2748	C2
2755	C2
2756	C2
2757	C2
2758	C1
2759	A2
2760	C2
2780	C1
2788	B1
2789	B1
5701	A2

DOLBY PROLOGIC BOARD - COPPER SIDE VIEW


C
B
A
2
1
7701
7780
8204 090 5556
2713
2715
2716
2724
2725
2730
2731
2732
2735
2736
2737
2738
2745
2749
2751
2757
2761
2786
3701
3702
3703
3704
3705
3706
3709
3710
3712
3714
3715
3716
3727
3728
3733
3734
3735
3736
3737
3738
3739
3740
3744
3745
3746
3781
3782
3784
3788
3780
4702
4717

2713	A1
2715	B2
2716	A1
2718	A1
2719	A1
2720	A1
2724	A2
2725	A2
2730	A2
2731	B2
2732	B2
2734	B2
2735	B2
2736	B2
2737	C2
2738	C2
2745	C2
2749	B2
2750	B2
2751	B2
2752	B2
2753	B2
2754	B2
2761	A2
2762	B2
2763	B2
2781	C1
2783	C1
2785	C1
3701	B1
3702	B1
3703	A1
3704	A1
3705	A1
3706	A2
3709	B2
3710	B1
3712	B2
3714	A2
3715	A2
3716	A2
3718	A1
3719	A1
3720	A1
3727	B2
3728	B2
3733	C2
3734	B2
3735	B2
3736	B2
3737	C2
3739	B2
3740	B2
3741	B2
3742	B2
3743	B2
3744	B2
3745	B2
3746	B2
3747	B1
3748	B1
3780	B1
3781	B1
3782	B1
3783	C1
3784	C1
3785	C1
3788	B1
4701	C2
4702	C2
4703	A1
4704	A1
4705	A1
4706	C1
4707	B2
4708	B1
4709	B1
4710	A1
4711	A1
4712	A1
4713	A1
4714	A1
4715	A1
4716	B1
4717	C1
4718	A2
4719	A2
4720	A1
4721	A1
7701	A2
7780	C1

ELECTRICAL PARTSLIST - DOLBY PROLOGIC BOARD

MISCELLANEOUS

1003	4822 214 13051	DPL MODULE

CAPACITORS

2701	4822 124 41579	10UF 20% 50V
2702	4822 124 41579	10UF 20% 50V
2703	4822 124 41579	10UF 20% 50V
2704	4822 124 41579	10UF 20% 50V
2705	4822 124 41579	10UF 20% 50V
2706	4822 124 41579	10UF 20% 50V
2707	4822 124 41584	100UF 20% 10V
2708	4822 124 41584	100UF 20% 10V
2709	4822 124 41584	100UF 20% 10V
2710	4822 124 11912	220UF 20% 6,3V
2711	4822 124 41579	10UF 20% 50V
2712	4822 124 40433	47UF20% 25V
2713	4822 126 13196	100NF 10% 0805 X7R 2
2714	5322 121 42386	100NF 5% 63V
2715	4822 126 13196	100NF 10% 0805 X7R 2
2716	4822 126 13196	100NF 10% 0805 X7R 2
2717	4822 124 81151	22UF 50V
2718	5322 122 32531	100PF 5%NP0 50V
2719	5322 122 32531	100PF 5%NP0 50V
2720	5322 122 32531	100PF 5%NP0 50V
2723	4822 124 40242	1UF20% 63V
2724	4822 122 33177	10NF 20% X7R 50V
2725	4822 126 10847	1,8NF10%X7R 63V
2726	5322 121 42465	68NF 5% 63V
2727	5322 121 42386	100NF 5% 63V
2728	5322 121 42386	100NF 5% 63V
2729	5322 121 42465	68NF 5% 63V
2730	4822 122 33177	10NF 20% X7R 50V
2731	4822 126 10847	1,8NF10%X7R 63V
2732	4822 126 13196	100NF 10% 0805 X7R 2
2733	5322 121 42386	100NF 5% 63V
2734	4822 126 10847	1,8NF10%X7R 63V
2735	4822 126 13196	100NF 10% 0805 X7R 2
2736	4822 122 33575	220PF 5%NPO 50V
2737	4822 122 32646	5,6NF10%X7R 50V
2738	4822 122 33797	47NF20%Y5V 50V
2739	4822 121 42408	220NF 5% 63V
2740	4822 121 42408	220NF 5% 63V
2741	4822 124 40769	4,7UF20% 100V
2742	4822 124 40769	4,7UF20% 100V
2743	4822 121 42408	220NF 5% 63V
2744	4822 121 42408	220NF 5% 63V
2745	4822 126 13196	100NF 10% 0805 X7R 2
2746	4822 121 43526	47NF 5% 250V
2747	4822 121 43526	47NF 5% 250V
2748	5322 121 42386	100NF 5% 63V
2749	4822 126 13196	100NF 10% 0805 X7R 2
2750	5322 122 32654	22NF10%X7R 63V
2751	5322 122 32654	22NF10%X7R 63V
2752	4822 126 13196	100NF 10% 0805 X7R 2
2753	4822 122 32535	680PF10%X7R 63V
2754	5322 126 10184	680P 5% NPO 50V.
2755	5322 121 42386	100NF 5% 63V
2756	5322 121 42386	100NF 5% 63V
2757	5322 121 42386	100NF 5% 63V
2758	5322 121 42386	100NF 5% 63V
2759	4822 124 81151	22UF 50V
2760	4822 124 40242	1UF20% 63V
2761	4822 122 32646	5,6NF10%X7R 50V
2762	5322 122 32268	470PF 10% 50V
2763	5322 122 32268	470PF 10% 50V
2780	5322 121 42661	330NF 5% 63V
2781	5322 122 32658	22PF 5% 50V
2783	5322 122 32658	22PF 5% 50V
2785	4822 126 13196	100NF 10% 0805 X7R 2
2788	4822 124 41579	10UF 20% 50V
2789	4822 124 41579	10UF 20% 50V

RESISTORS

3701	4822 051 20104	100K00 5% 0,1W
3702	4822 051 20104	100K00 5% 0,1W
3703	4822 051 20104	100K00 5% 0,1W
3704	4822 051 20104	100K00 5% 0,1W
3705	4822 051 20104	100K00 5% 0,1W
3706	4822 051 20104	100K00 5% 0,1W
3709	4822 051 20104	100K00 5% 0,1W
3710	4822 117 13579	220K 1% 0.1W RC12H 0
3712	4822 051 20475	4M70 5% 0,1W
3714	4822 117 10833	10K 1% 0,1W
3715	4822 117 10833	10K 1% 0,1W
3716	4822 051 20105	1M00 5% 0,1W
3718	4822 051 10102	1K00 2% 0,25W
3719	4822 051 10102	1K00 2% 0,25W
3720	4822 051 10102	1K00 2% 0,25W
3727	4822 117 10834	47K 1% 0,1W
3728	4822 051 20184	180K00 5% 0,1W
3733	4822 117 11383	12K 1% 0,1W
3734	4822 117 11383	12K 1% 0,1W
3735	4822 117 11383	12K 1% 0,1W
3736	4822 117 11383	12K 1% 0,1W
3737	4822 051 20334	330K00 5% 0,1W
3739	4822 117 10834	47K 1% 0,1W
3740	4822 051 20153	15K00 5% 0,1W
3741	4822 117 10834	47K 1% 0,1W
3742	4822 051 20153	15K00 5% 0,1W
3743	4822 117 11507	6K8 1% 0,1W
3744	4822 051 20681	680R00 5% 0,1W
3745	4822 117 11507	6K8 1% 0,1W
3746	4822 051 20681	680R00 5% 0,1W
3747	4822 051 20471	470R00 5% 0,1W
3748	4822 051 20471	470R00 5% 0,1W
3780	4822 117 10833	10K 1% 0,1W
3781	4822 117 10833	10K 1% 0,1W
3782	4822 117 10833	10K 1% 0,1W
3783	4822 051 20182	1K80 5% 0,1W
3784	4822 051 10102	1K00 2% 0,25W
3785	4822 051 10102	1K00 2% 0,25W
3788	4822 051 20104	100K00 5% 0,1W

JUMPERS

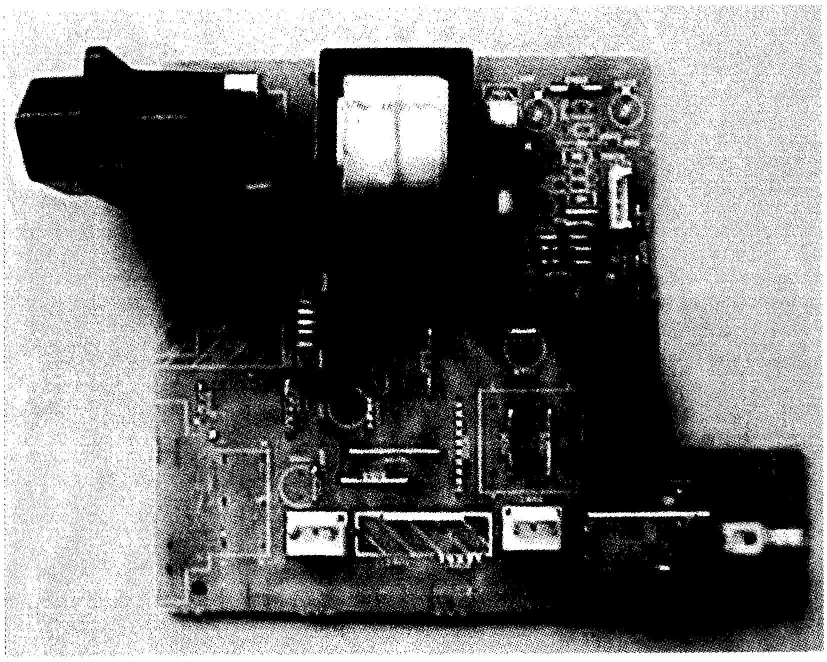
4701	4822 051 20008	0R00 JUMP. (0805)
to		
4720	4822 051 20008	0R00 JUMP. (0805)

FILTERS

5701	4822 242 72527	CST4,00MGW-TF01

ICs

7701	4822 209 17347	M62460FP
7780	4822 209 83357	NJM4560M

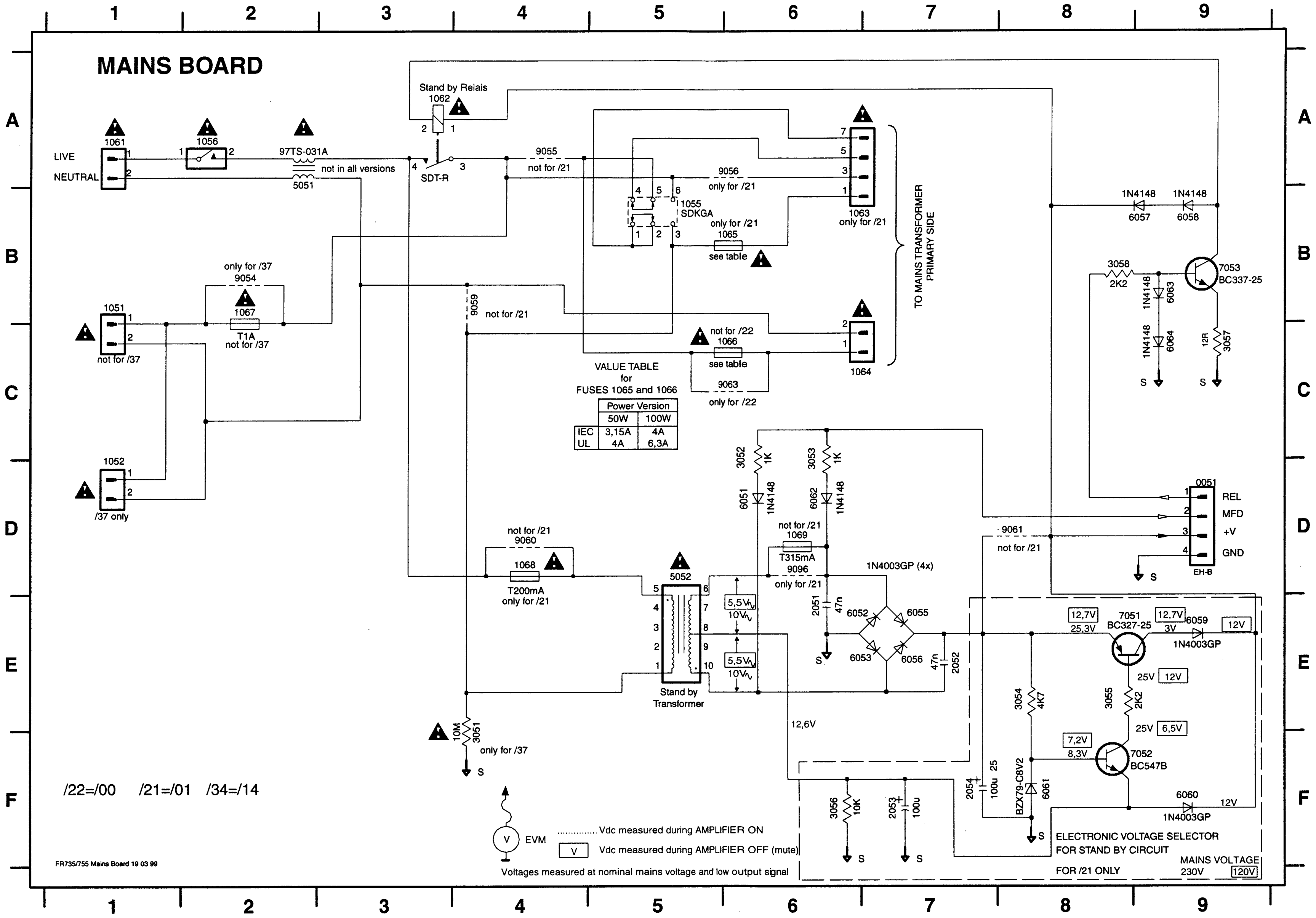


MAINS BOARD

TABLE OF CONTENTS

Circuit diagram 9-2
Component layout 9-3
Partslist 9-5

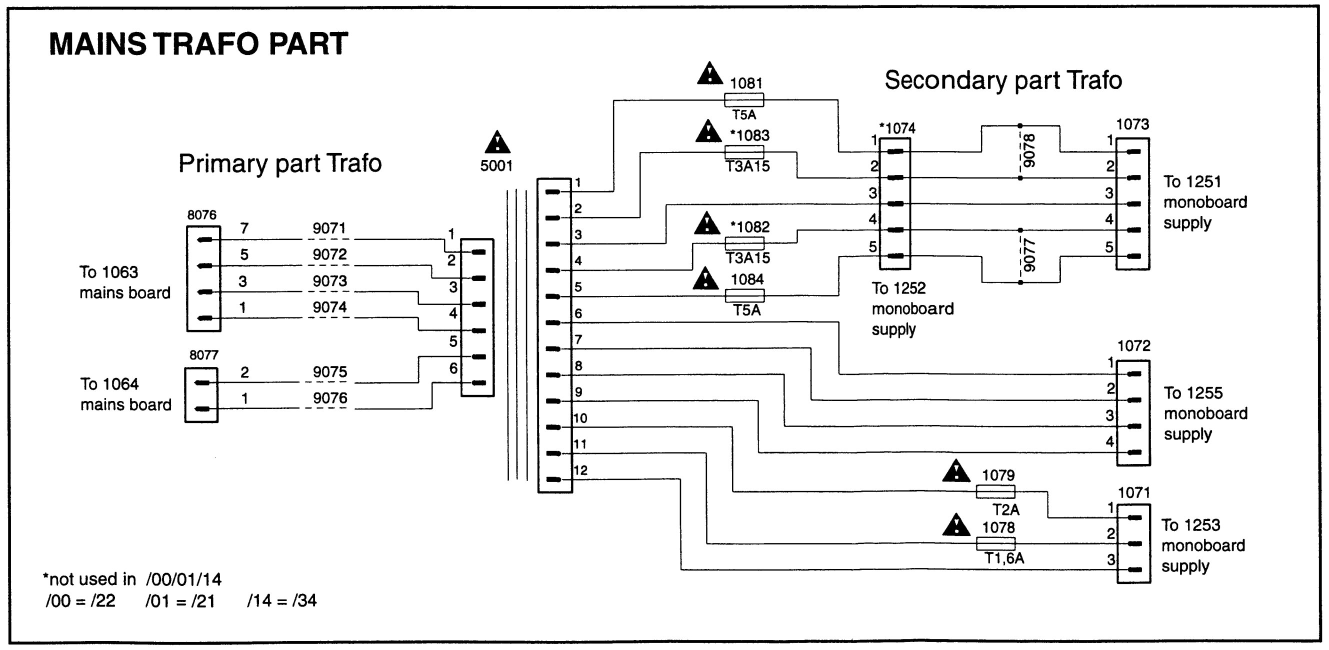
MAINS BOARD - CIRCUIT DIAGRAM


MAINS BOARD
1 2 3 4 5 6 7 8 9
A B C D E F
LIVE
NEUTRAL
1061
1056
97TS-031A
not in all versions
5051
Stand by Relais
1062
SDT-R
9055
not for /21
9056
only for /21
1055
SDKGA
only for /21
1065
see table
1063
only for /21
TO MAINS TRANSFORMER PRIMARY SIDE
only for /37
9054
1067
T1A
not for /37
1051
not for /37
1052
/37 only
9059
not for /21
not for /22
1066
see table
9063
only for /22
1064
VALUE TABLE for FUSES 1065 and 1066
3052 1K
3053 1K
6051 1N4148
6062 1N4148
not for /21
1069
T315mA
9096
only for /21
1N4003GP (4x)
not for /21
9060
1068
T200mA
only for /21
5052
Stand by Transformer
5,5V
10V
2051 47n
6052 6055
6053 6056
47n 2052
12,6V
1N4148 1N4148
6057 6058
3058 2K2
1N4148 6063
1N4148 6064
12R 3057
7053
BC337-25
0051
REL
MFD
+V
GND
EH-B
9061
not for /21
12,7V 25,3V
7051 BC327-25
12,7V 3V
6059
12V
1N4003GP
25V 12V
3054 4K7
3055 2K2
25V 6,5V
7,2V 8,3V
7052 BC547B
2054 100u 25
BZX79-C8V2
6061
6060
1N4003GP
12V
3056 10K
2053 100u
ELECTRONIC VOLTAGE SELECTOR FOR STAND BY CIRCUIT
FOR /21 ONLY
MAINS VOLTAGE 230V 120V
10M 3051
only for /37
/22=/00 /21=/01 /34=/14
V EVM
Vdc measured during AMPLIFIER ON
V Vdc measured during AMPLIFIER OFF (mute)
Voltages measured at nominal mains voltage and low output signal
FR735/755 Mains Board 19 03 99
S

VALUE TABLE for FUSES 1065 and 1066

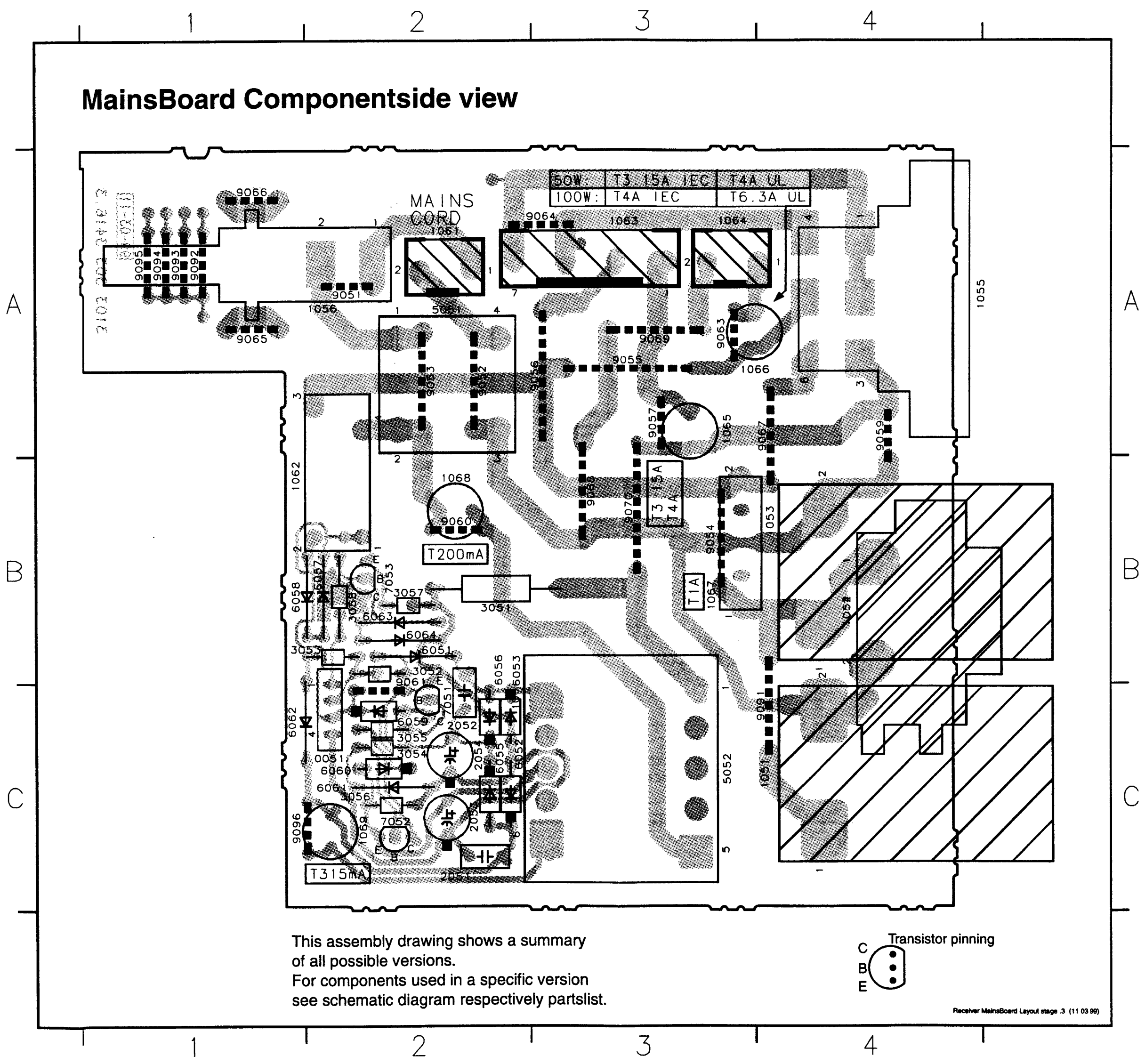
	Power Version	
	50W	100W
IEC	3,15A	4A
UL	4A	6,3A

0051	D9
1051	B1
1052	D1
1053	C1
1054	D1
1055	B5
1056	A2
1061	A1
1062	A3
1063	B6
1064	C6
1065	B6
1066	C6
1067	B2
1068	D4
1069	D6
2051	E6
2052	E7
2053	F7
2054	F7
3051	F4
3052	C6
3053	C6
3054	E8
3055	E8
3056	F6
3057	C9
3058	B8
5051	A2
5052	D5
6051	D6
6052	E7
6053	E6
6055	E7
6056	E7
6057	B9
6058	B9
6059	E9
6060	F9
6061	F8
6062	D6
6063	B9
6064	C9
7051	E8
7052	F8
7053	B9
9051	A2
9052	B2
9053	A2
9054	B2
9055	A4
9056	A6
9057	B6
9059	B4
9060	D4
9061	D8
9063	C6
9064	A5
9065	B1
9066	B1
9092	E2
9093	E2
9094	F2
9095	F2
9096	D6


MAINS TRAFO PART
Primary part Trafo
Secondary part Trafo
5001
8076
To 1063 mains board
9071
9072
9073
9074
8077
To 1064 mains board
9075
9076
1081
T5A
*1083
T3A15
*1082
T3A15
1084
T5A
*1074
9078
9077
1073
To 1251 monoboard supply
To 1252 monoboard supply
1072
To 1255 monoboard supply
1079
T2A
1078
T1,6A
1071
To 1253 monoboard supply

*not used in /00/01/14
/00 = /22 /01 = /21 /14 = /34

MAINS BOARD - COMPONENTSIDE VIEW & COPPERSIDE VIEW

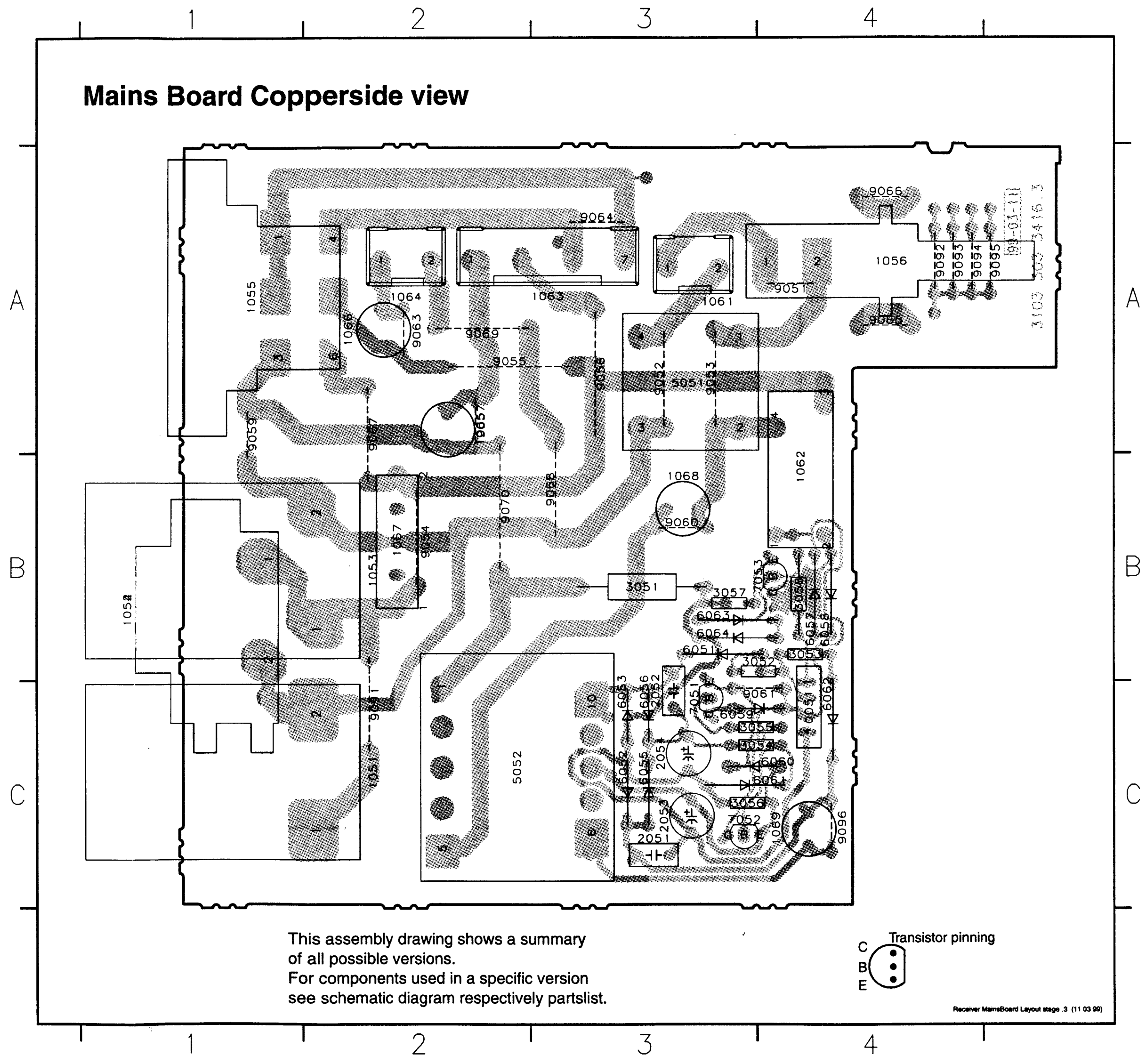


MainsBoard Componentside view

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

1
2
3
4
A
B
C
MAINS CORD
50W: T3.15A IEC T4A UL
100W: T4A IEC T6.3A UL
T3.15A T4A
T200mA
T1A
T315mA
Transistor pinning
C
B
E
Receiver MainsBoard Layout stage .3 (11 03 99)

0051	C2
1051	C4
1052	B4
1053	B4
1054	B4
1055	A4
1056	A2
1061	A2
1062	A2
1063	A3
1064	A3
1065	A3
1066	A3
1067	B3
1068	B2
1069	C2
2051	C2
2052	C2
2053	C2
2054	C2
3051	B2
3052	B2
3053	B2
3054	C2
3055	C2
3056	C2
3057	B2
3058	B2
5051	A2
5052	C3
6051	B2
6052	C2
6053	B2
6055	C2
6056	B2
6057	B2
6058	B1
6059	C2
6060	C2
6061	C2
6062	C1
6063	B2
6064	B2
7051	C2
7052	C2
7053	B2
9051	A2
9052	A2
9053	A2
9054	B3
9055	A3
9056	A3
9057	A3
9059	A4
9060	B2
9061	B2
9063	A3
9064	A3
9065	A1
9066	A1
9067	A4
9068	B3
9069	A3
9070	B3
9091	C4
9092	A1
9093	A1
9094	A1
9095	A1
9096	C1



Mains Board Copperside view

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

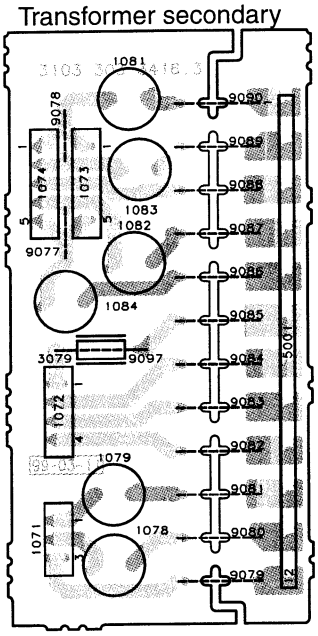
1
2
3
4
A
B
C
Transistor pinning
C
B
E
Receiver MainsBoard Layout stage .3 (11 03 99)

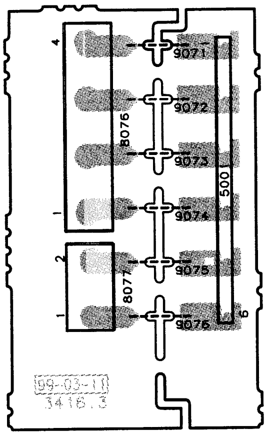
0051	C3
1051	C1
1052	B1
1053	B1
1054	B1
1055	A1
1056	A4
1061	A3
1062	B3
1063	A2
1064	A2
1065	A2
1066	A1
1067	B2
1068	B3
1069	C3
2051	C3
2052	C3
2053	C3
2054	C3
3051	B3
3052	B3
3053	B3
3054	C3
3055	C3
3056	C3
3057	B3
3058	B3
5051	A3
5052	C2
6051	B3
6052	C3
6053	C3
6055	C3
6056	C3
6057	B3
6058	B3
6059	C3
6060	C3
6061	C3
6062	C3
6063	B3
6064	B3
7051	C3
7052	C3
7053	B3
9051	A3
9052	A3
9053	A3
9054	B2
9055	A2
9056	A2
9057	A2
9059	A1
9060	B3
9061	C3
9063	A2
9064	A2
9065	A4
9066	A4
9067	A1
9068	B2
9069	A2
9070	B2
9091	C1
9092	A4
9093	A4
9094	A4
9095	A4
9096	C4

TRAFO BOARD

Copperside view

Interconnection Board
Transformer secondary

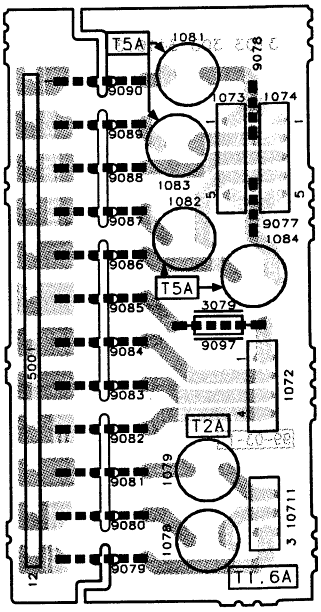

3103 30 3416.3
1081
9078
1074
1073
1083
1082
9077
1084
3079
9097
1072
99-03-11
1079
1078
1071
9090
9089
9088
9087
9086
9085
9084
9083
9082
9081
9080
9079
5001
12
1
5
4

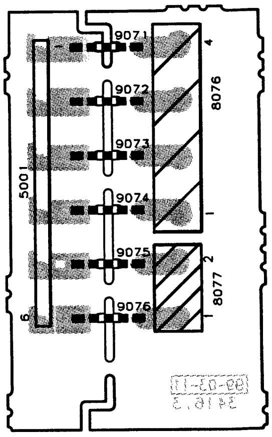

8076
8077
9071
9072
9073
9074
9075
9076
5001
6
4
2
1
99-03-11
3416.3

Interconnection Board
Transformer primary

Componentside view

Interconnection Board
Transformer secondary


T5A
1081
9078
1073
1074
9090
9089
9088
1083
1082
9087
9077
1084
9086
T5A
9085
3079
9097
9084
9083
1072
9082
T2A
9081
1079
9080
1078
9079
10711
T1.6A
5001
12
1
5
4
3


9071
9072
9073
9074
9075
9076
8076
8077
5001
6
4
1
2
99-03-11
3416.3

Interconnection Board
Transformer primary

ELECTRICAL PARTSLIST - MAINS BOARD

MISCELLANEOUS

1051 ⚠	4822 267 31994	MAINS OUTLET
1055 ⚠	4822 272 10269	VOLTAGE SEL. only in /01
1056 ⚠	4822 276 13224	MAINS SWITCH
1061 ⚠	4822 265 20723	MAINS INLET
1062 ⚠	4822 280 10391	RELAY
1063 ⚠	4822 267 10728	B4P7-VH only in /01
1064 ⚠	4822 265 20723	B2P3-VH
1065 ⚠	4822 071 53152	19372(3.15A)only in /01
1066 ⚠	4822 071 53152	19372(3.15A) only in /01
1067 ⚠	4822 252 11224	19181I1(1,0A)
1068 ⚠	4822 071 52001	19372(200MA)only in /01
1069 ⚠	4822 071 53151	19372(315MA) only in /00/14
1078 ⚠	4822 071 51602	19372(1.6A)
1079 ⚠	4822 071 52002	19372(2A)
1081 ⚠	4822 071 55002	19372(5A)
1084 ⚠	4822 071 55002	19372(5A)

CAPACITORS

2051	4822 121 43526	47NF 5% 250V
2052	4822 121 43526	47NF 5% 250V
2053	4822 124 81029	100UF20% 25V only in /01
2054	4822 124 81029	100UF20% 25V only in /01

RESISTORS

3051	4822 053 21106	10M00 5% 0,5W only in /17
3052	4822 050 11002	1K00 1% 0,4W
3053	4822 050 11002	1K00 1% 0,4W
3054	4822 116 52283	4K7 5% 0,5W only in /01
3055	4822 116 52256	2K2 5% 0,5W only in /01
3056	4822 116 83864	10K 5% 0,5W only in /01
3057	4822 116 52179	12E 5% 0,5W
3058	4822 116 52256	2K2 5% 0,5W

TRAFO

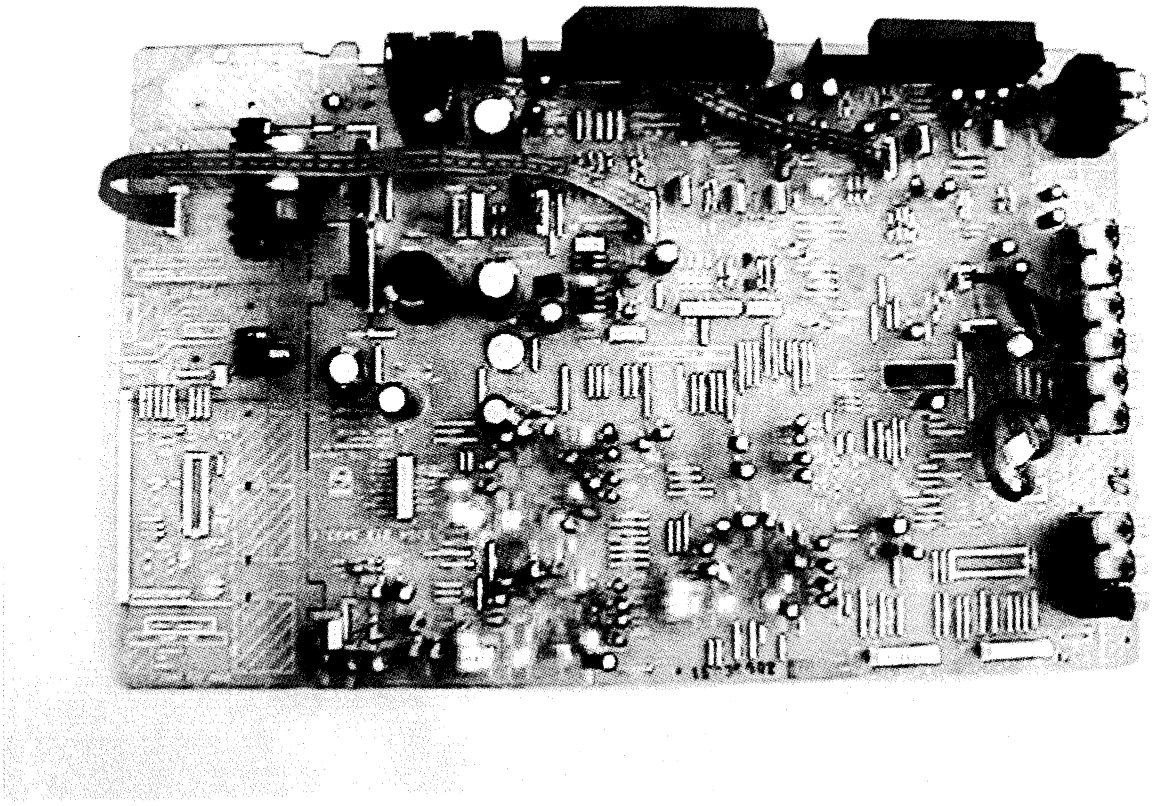
5052 ⚠	4822 146 11144	STANDBY for /01
5052 ⚠	4822 146 11143	STBY TRAFO for /00/14

DIODES

6051	4822 130 30621	1N4148
6052	4822 130 31878	1N4003G
6053	4822 130 31878	1N4003G
6055	4822 130 31878	1N4003G
6056	4822 130 31878	1N4003G
6057	4822 130 30621	1N4148
6058	4822 130 30621	1N4148
6059	4822 130 31878	1N4003G only in /01
6060	4822 130 31878	1N4003G only in /01
6061	4822 130 34382	BZX79-B8V2 only in /01
6062	4822 130 30621	1N4148
6063	4822 130 30621	1N4148
6064	4822 130 30621	1N4148

TRANSISTORS

7051	4822 130 41246	BC327-25 only in /01
7052	4822 130 40959	BC547B only in /01
7053	4822 130 40981	BC337-25



MONO BOARD

TABLE OF CONTENTS

Measurement hint 10-2
Speaker/P50 Component layout 10-3
Circuit diagram Source selector 10-4
Circuit diagram Volume controle 10-5
Circuit diagram Supply 10-6
Circuit diagram Amplifier 10-7
Component layout 10-8
Mappings 10-9
Chips layout 10-10

MEASUREMENT REFERENCES TO LAYOUT ON PAGE 10-8

IC7641

IC 7641 Pin	Can be measure via Test point on component side monoboard	Funtionality
16	TP 1	Left in
17	TP 2	Dpl Left in
18	TP 3	not used
8	TP 4	Right in
9	TP 5	Dpl right in
10	TP 6	not used
3	TP 7	4,7V
2	TP 8	4,7V
4	TP 9	4,7V
26	TP 10	4,7V
27	TP 11	4,7V
33	TP 12	Right out
36/40/43	TP 13	Ground
41/42	TP 14	9,4V
39	TP 15	4,7V
19	TP 16	8,7V
34	TP 18	Left out
25	TP 19	4,7V
24	TP 20	4,7V
12	TP 21	4,7V
20	TP 22	4,7V
21	TP 23	4,7V

IC7642

IC 7642 Pin	Can be measure via Test point on component side monoboard	Funtionality
16	TP 24	not used
17	TP 25	Dpl Center in
18	TP 26	not used
8	TP 27	not used
9	TP 28	Surround in
10	TP 29	not used
3	TP 30	4,7V
2	TP 31	4,7V
4	TP 32	4,7V
26	TP 33	4,7V
27	TP 34	4,7V
33	TP 35	Surround out
36/43	TP 36	Ground
40/41/42	TP 37	9,4V
39	TP 38	4,7V
19	TP 39	8,7V
34	TP 40	Center out
25	TP 41	4,7V
24	TP 42	4,7V
12	TP 43	4,7V
20	TP 44	4,7V
21	TP 45	4,7V

IC7601

IC 7601 Pin	Can be measure via Test point on component side monoboard	Funtionality
5	TP 69	Headphone Amp L in
4	TP 70	-13,5V
8	TP 71	12V
3	TP 72	Headphone Amp R in

Tr 7622

Tr7622	Can be measure via Test point on component side monoboard	Funtionality
B	TP 99	-0,5V
C	TP 100	Ground
E	TP 101	Headphone Amp R out

IC7502

IC 7503 Pin	Can be measure via Test point on component side monoboard	Funtionality
5	TP 73	Right in
4	TP 74	-12V
8	TP 75	11V
3	TP 76	Left in

Tr 7653

Tr7653	Can be measure via Test point on component side monoboard	Funtionality
B	TP 86	-1,8V
E	TP 88	0V

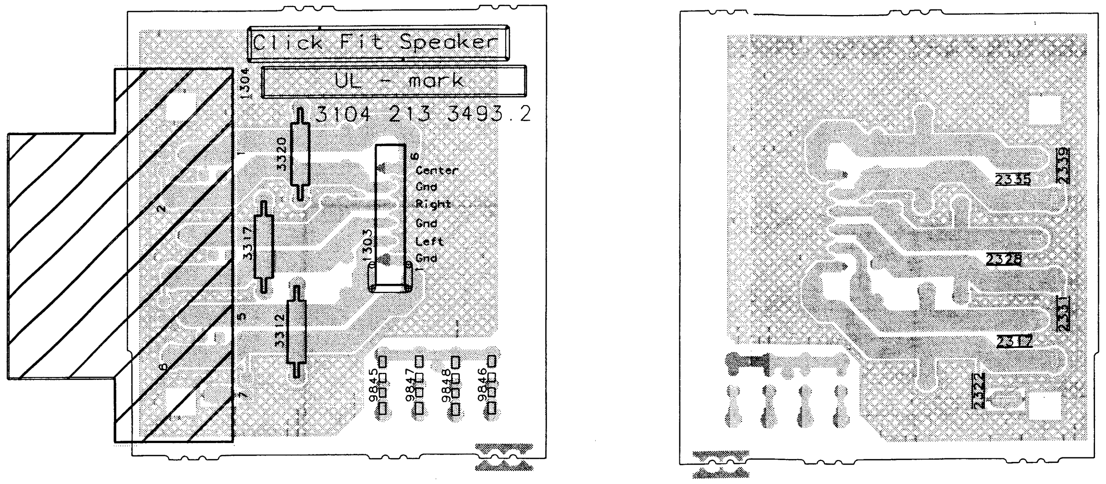
Tr 7621

Tr7621	Can be measure via Test point on component side monoboard	Funtionality
B	TP 96	-1,5V
C	TP 97	Ground
E	TP 98	Headphone Amp L out

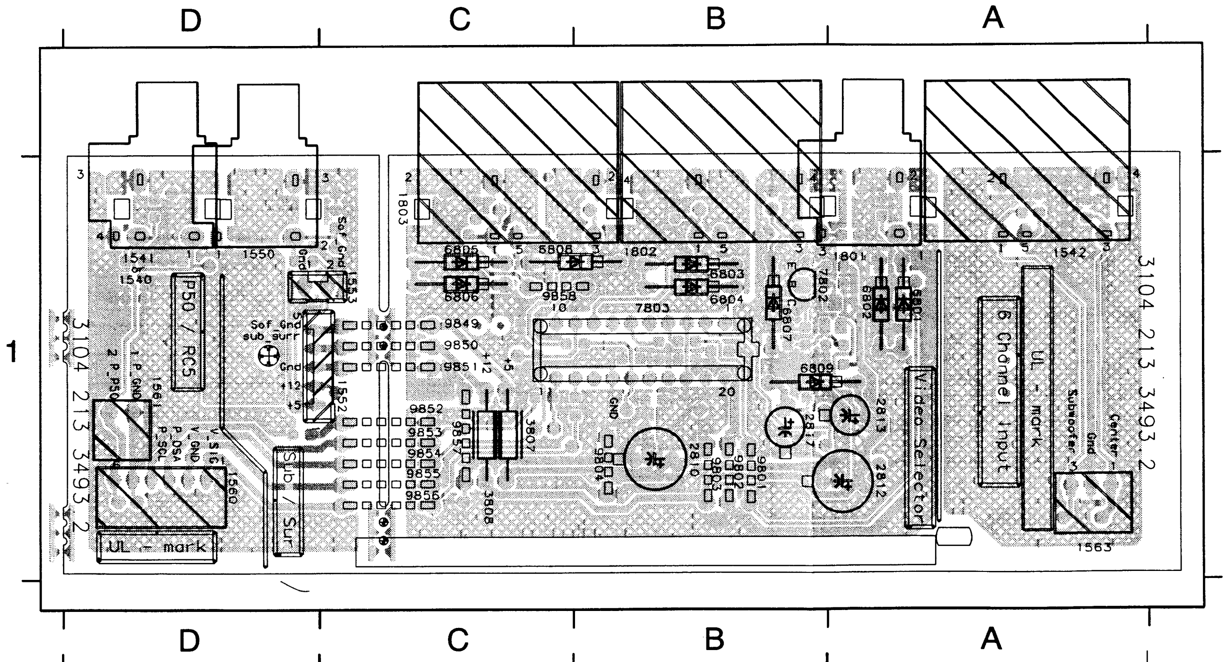
Tr 7658

Tr7658	Can be measure via Test point on component side monoboard	Funtionality
B	TP 83	5V
C	TP 84	-13V
E	TP 85	5V

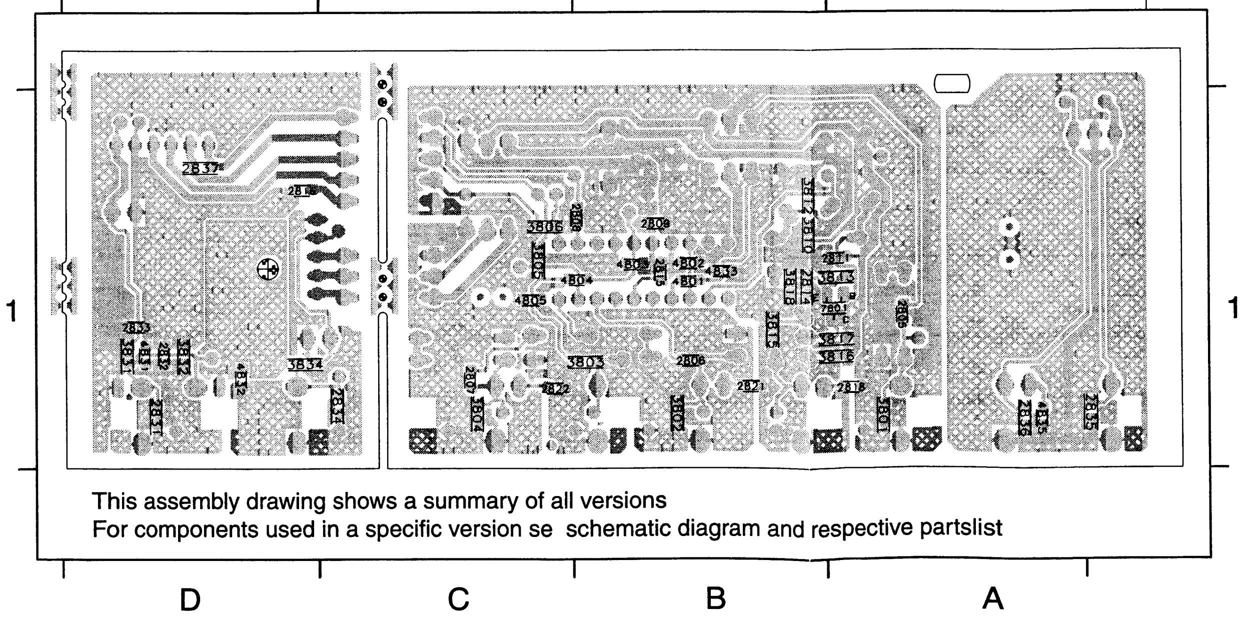
CLICK FIT SPEAKER BOARD - COMPONENT VIEW & COPPER SIDE VIEW


Click Fit Speaker
UL - mark
3104 213 3493.2
Center
Gnd
Right
Gnd
Left
Gnd
3320
3317
3312
1303
1304
9845
9847
9848
9846
2335
2339
2328
2331
2312
2322

P50/RC5 BOARD - COMPONENT VIEW & COPPER SIDE VIEW


D
C
B
A
1
P50 / RC5
3104 213 3493.2
UL - mark
Video Selector
6 Channel input
Subwoofer
Center
Sub Surr
1540
1541
1542
1550
1552
1553
1560
1561
1563
1801
1802
1803
7802
7803
6805
6806
6803
6804
6807
6808
6809
2810
2812
2813
2817
3807
3808

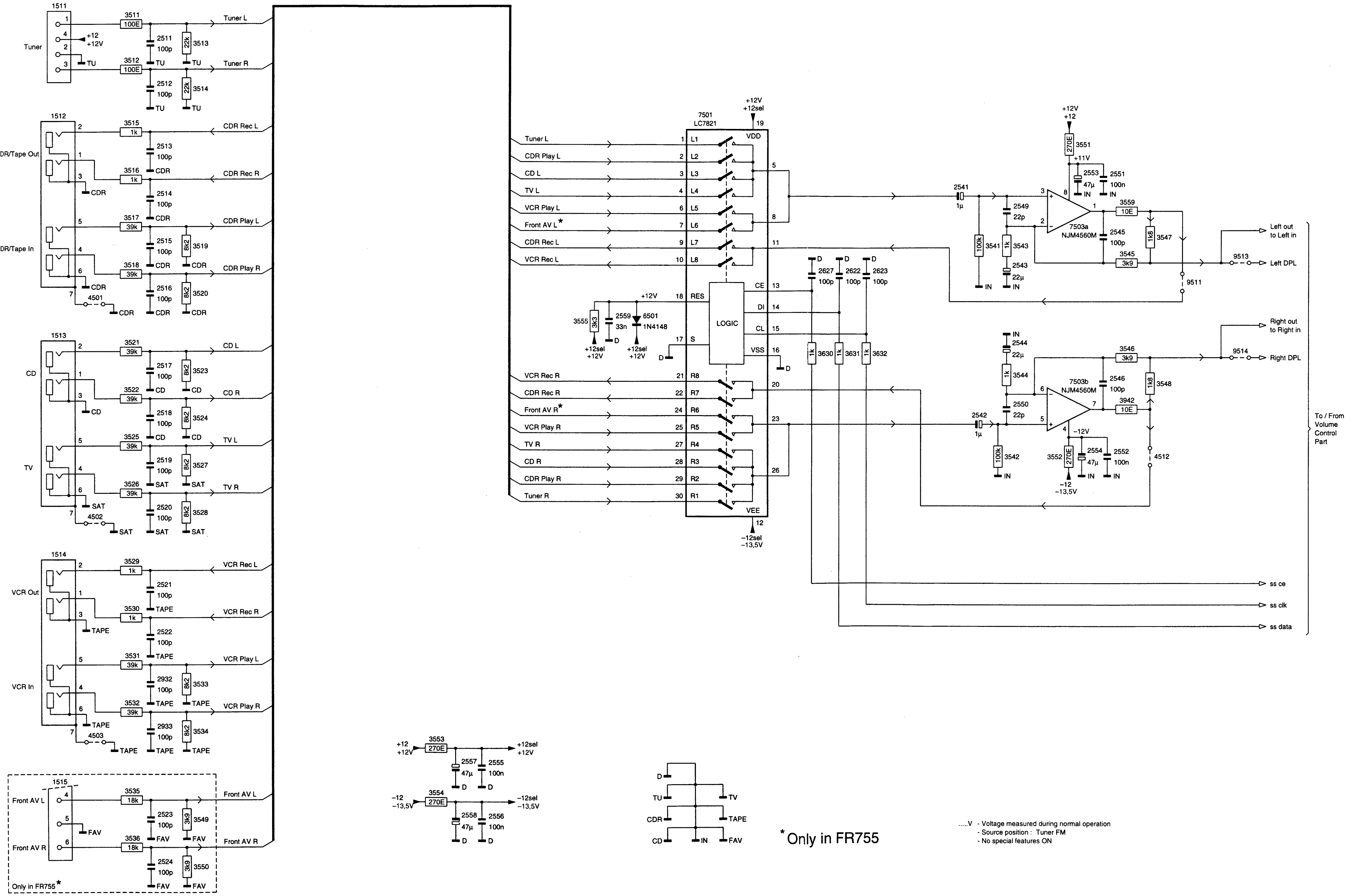
1540	D1
1541	D1
1542	A1
1550	D1
1552	C1
1553	C1
1560	D1
1561	D1
1563	A1
1801	A1
1802	B1
1803	C1
2810	B1
2812	A1
2813	A1
2817	B1
3807	C1
3808	C1
6801	A1
6802	A1
6803	B1
6804	B1
6805	C1
6806	C1
6807	B1
6808	C1
6809	B1
7802	B1
7803	B1
9801	B1
9802	B1
9803	B1
9804	B1
9849	C1
9850	C1
9851	C1
9852	C1
9853	C1
9854	C1
9855	C1
9856	C1
9857	C1
9858	C1


D
C
B
A
1
2837
2833
2831
2832
3834
3831
3832
4832
4831
3806
3805
3804
4804
4805
3803
2808
2807
2822
2821
3802
2806
3801
2805
2835
2836
2818
3810
3812
3813
3815
3816
3817
3818
4801
4802
4803
4833
4835
7801

This assembly drawing shows a summary of all versions
For components used in a specific version se schematic diagram and respective partslist

2805	A1
2806	B1
2807	C1
2808	B1
2809	B1
2811	A1
2814	B1
2815	B1
2816	D1
2818	A1
2821	B1
2822	C1
2831	D1
2832	D1
2833	D1
2834	C1
2835	A1
2836	A1
2837	D1
3801	A1
3802	B1
3803	C1
3804	C1
3805	C1
3806	C1
3810	A1
3812	B1
3813	A1
3815	B1
3816	A1
3817	A1
3818	B1
3831	D1
3832	D1
3834	D1
4801	B1
4802	B1
4803	B1
4804	B1
4805	C1
4831	D1
4832	D1
4833	B1
4835	A1
7801	A1

SOURCE SELECTOR PART FR735 - FR755


1511
Tuner
+12
+12V
TU
3511
100E
3512
2511
100p
2512
3513
22k
3514
Tuner L
Tuner R
1512
CDR/Tape Out
CDR/Tape In
CDR
3515
3516
3517
3518
1k
39k
2513
2514
2515
2516
3519
3520
8k2
4501
CDR Rec L
CDR Rec R
CDR Play L
CDR Play R
1513
CD
TV
SAT
3521
3522
3525
3526
2517
2518
2519
2520
3523
3524
3527
3528
4502
CD L
CD R
TV L
TV R
1514
VCR Out
VCR In
TAPE
3529
3530
3531
3532
2521
2522
2932
2933
3533
3534
4503
VCR Rec L
VCR Rec R
VCR Play L
VCR Play R
1515
Front AV L
Front AV R
FAV
3535
3536
18k
2523
2524
3549
3550
3k9
Only in FR755*
Front AV L*
Front AV R*
7501
LC7821
+12V
+12sel
VDD
VEE
-12sel
-13,5V
L1
L2
L3
L4
L5
L6
L7
L8
R1
R2
R3
R4
R5
R6
R7
R8
RES
S
LOGIC
CE
DI
CL
VSS
3555
3k3
2559
33n
6501
1N4148
2627
2622
2623
100p
3630
3631
3632
2541
1µ
3541
100k
3543
2549
22p
2543
22µ
IN
3551
270E
+11V
2553
47µ
2551
100n
7503a
NJM4560M
3559
10E
2545
3545
3547
1k8
9511
9513
Left out
to Left in
Left DPL
2544
3544
2550
2542
3542
7503b
2546
3546
3942
3548
3552
2554
2552
-12V
-13,5V
4512
9514
Right out
to Right in
Right DPL
To / From
Volume
Control
Part
ss ce
ss clk
ss data
3553
3554
+12sel
-12sel
2557
2555
2558
2556
D
TU
CDR
CD
TV
TAPE
FAV

*Only in FR755

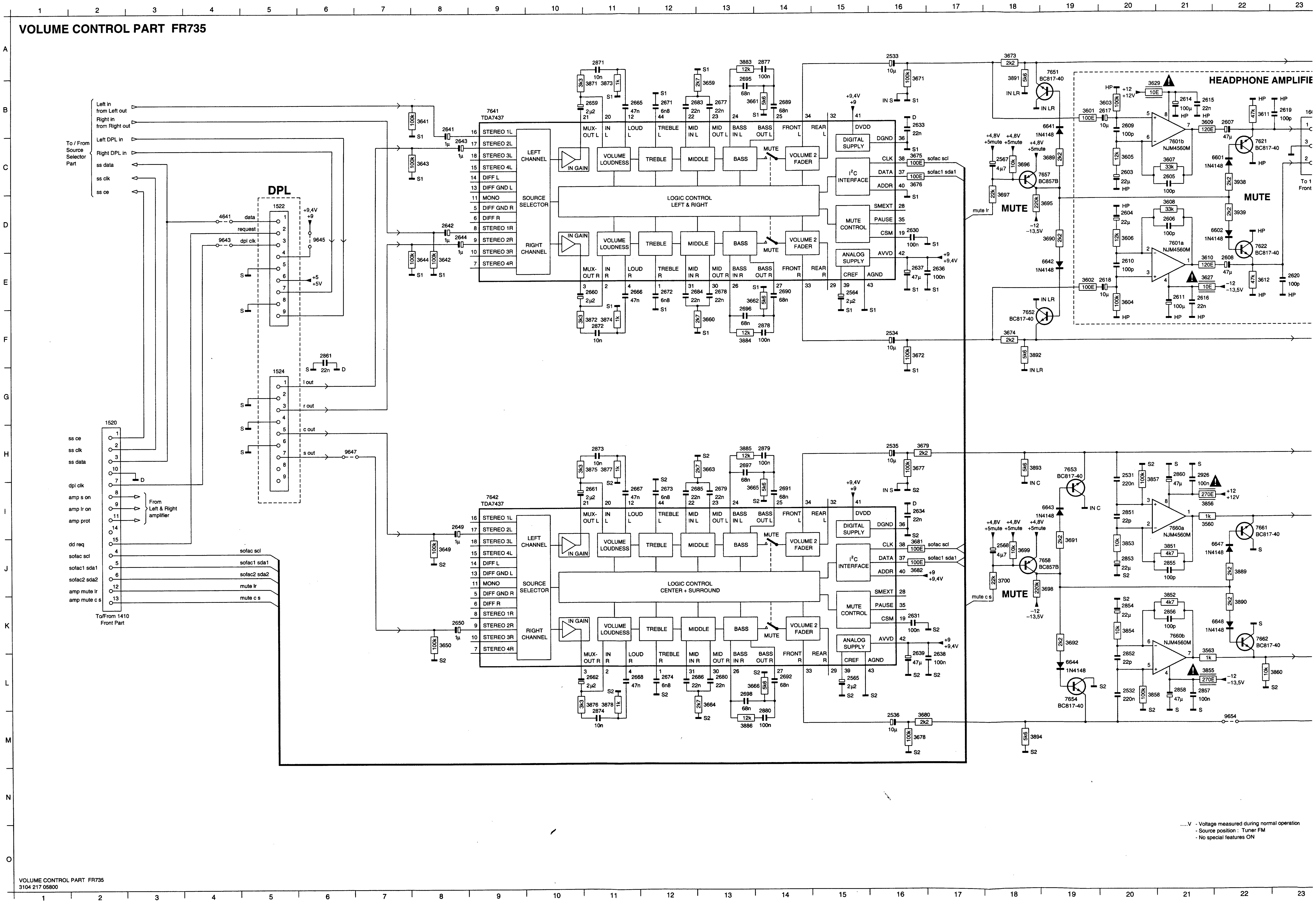
.....V - Voltage measured during normal operation
- Source position : Tuner FM
- No special features ON

1511	B2
1512	D2
1513	G2
1514	J2
1515	M2
2511	B3
2512	C3
2513	D3
2514	E3
2515	E3
2516	F3
2517	G3
2518	H3
2519	H3
2520	I3
2521	J3
2522	K3
2523	M3
2524	N3
2541	E14
2542	H15
2543	F15
2544	G15
2545	E17
2546	G17
2549	E15
2550	G15
2551	D17
2552	H17
2553	D16
2554	H16
2555	L8
2556	M8
2557	L8
2558	M8
2559	F10
2622	F13
2623	F13
2627	F13
2932	K3
2933	L3
3511	B3
3512	C3
3513	C4
3514	C4
3515	D3
3516	D3
3517	E3
3518	F3
3519	E4
3520	F4
3521	G3
3522	G3
3523	G4
3524	H4
3525	H3
3526	I3
3527	H4
3528	I4
3529	J3
3530	J3
3531	K3
3532	L3
3533	K4
3534	L4
3535	M3
3536	M3
3541	E15
3542	H15
3543	E15
3544	G15
3545	E17
3546	G17
3547	E17
3548	G17
3549	M4
3550	N4
3551	D16
3552	H16
3553	L7
3554	M7
3555	F9
3559	E17
3630	G13
3631	G13
3632	G13
3942	G17
4501	F2
4502	I2
4503	L2
4512	H17
6501	F10
7501	D11
7503a	E16
7503b	G16
9511	F18
9513	E18
9514	G18

SOURCE SELECTOR PART FR735 - FR755
3104 217 05800 / 05940 / 05960

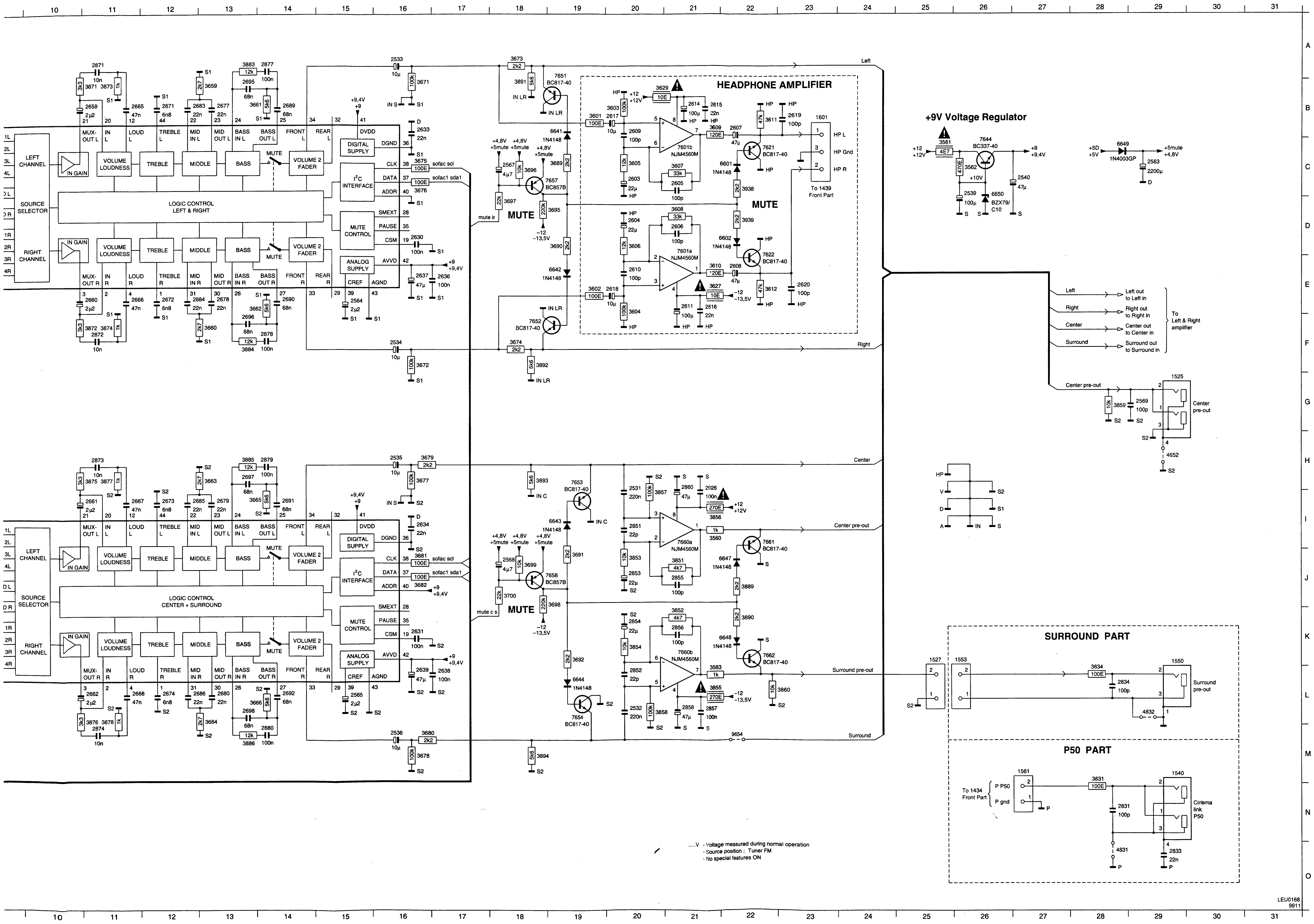
LEU0160
9912

VOLUME CONTROL PART FR735


DPL
1522
1524
1520
TDA7437
7641
7642
To / From Source Selector Part
Left in from Left out
Right in from Right out
Left DPL in
Right DPL in
ss data
ss clk
ss ce
data
request
dpl clk
l out
r out
c out
s out
amp s on
amp lr on
amp prot
dd req
sofac scl
sofac1 sda1
sofac2 sda2
amp mute lr
amp mute c s
mute lr
mute c s
From Left & Right amplifier
To/From 1410 Front Part
STEREO 1L
STEREO 2L
STEREO 3L
STEREO 4L
DIFF L
DIFF GND L
MONO
DIFF GND R
DIFF R
STEREO 1R
STEREO 2R
STEREO 3R
STEREO 4R
LEFT CHANNEL
SOURCE SELECTOR
RIGHT CHANNEL
IN GAIN
VOLUME LOUDNESS
TREBLE
MIDDLE
BASS
MUTE
VOLUME 2 FADER
LOGIC CONTROL LEFT & RIGHT
LOGIC CONTROL CENTER + SURROUND
DIGITAL SUPPLY
I²C INTERFACE
MUTE CONTROL
ANALOG SUPPLY
DVDD
DGND
CLK
DATA
ADDR
SMEXT
PAUSE
CSM
AVVD
CREF
AGND
MUX-OUT L
MUX-OUT R
FRONT L
REAR L
FRONT R
REAR R
MUTE
HEADPHONE AMPLIFIE
NJM4560M
BC817-40
BC857B
1N4148
+9,4V
+12V
-12 -13,5V
+4,8V +5mute
To 1 Front

....V - Voltage measured during normal operation
- Source position : Tuner FM
- No special features ON

VOLUME CONTROL PART FR735
3104 217 05800

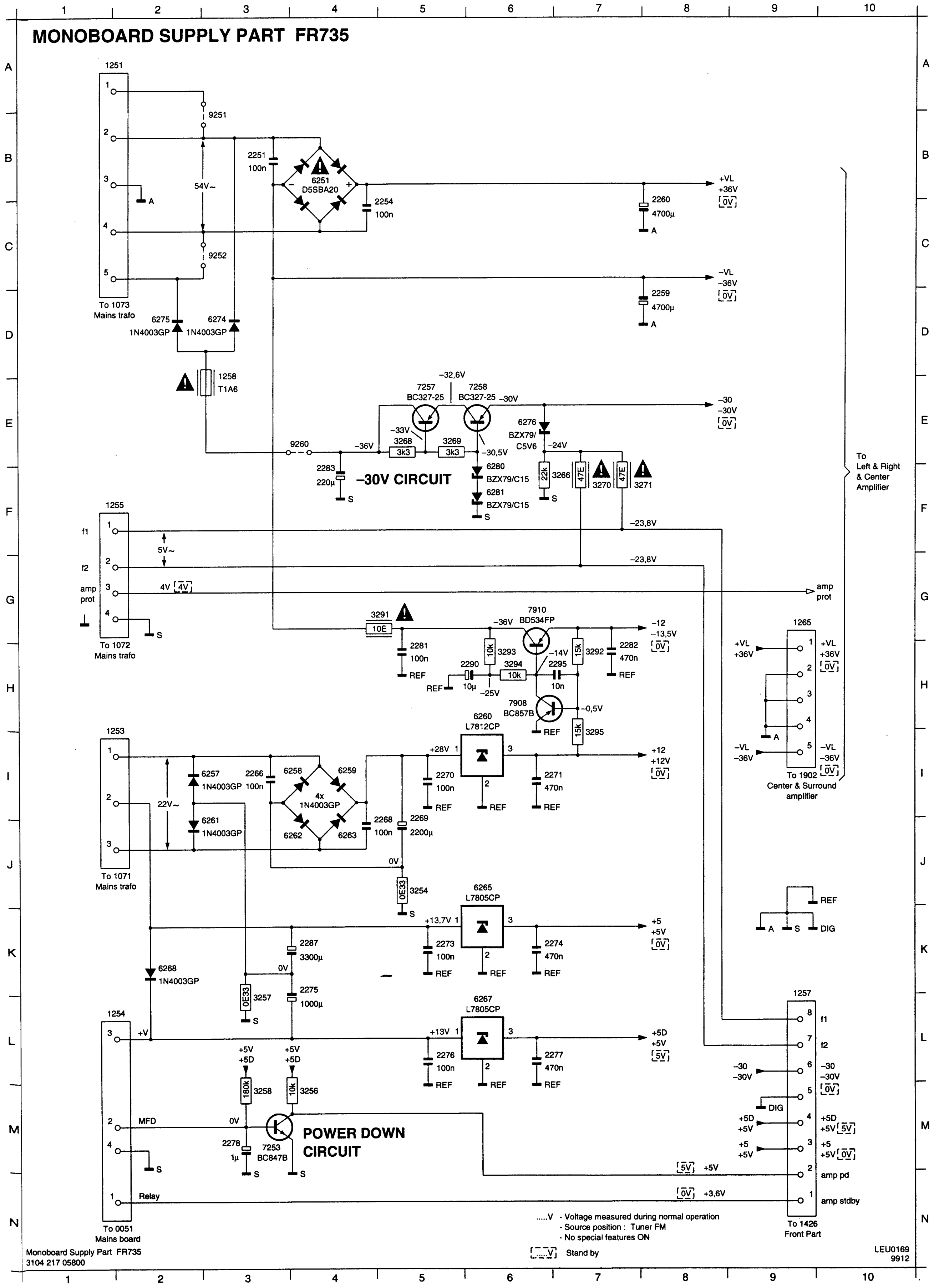

10-5
10-5
HEADPHONE AMPLIFIER
+9V Voltage Regulator
MUTE
MUTE
MUTE
MUTE
SURROUND PART
P50 PART
LEFT CHANNEL
SOURCE SELECTOR
RIGHT CHANNEL
IN GAIN
VOLUME LOUDNESS
TREBLE
MIDDLE
BASS
VOLUME 2 FADER
LOGIC CONTROL LEFT & RIGHT
LOGIC CONTROL CENTER + SURROUND
DIGITAL SUPPLY
I²C INTERFACE
MUTE CONTROL
ANALOG SUPPLY
NJM4560M
BC817-40
BC857B
BC337-40
1N4148
1N4003GP
BZX79/C10
To 1439 Front Part
HP L
HP Gnd
HP R
Left
Right
Center
Surround
Center pre-out
Surround pre-out
Left out to Left in
Right out to Right in
Center out to Center in
Surround out to Surround in
To Left & Right amplifier
Center pre-out
Surround pre-out
Cinema link P50
To 1434 Front Part
P P50
P gnd
sofac scl
sofac1 sda1
mute lr
mute c s
LEU0168
9911

.....V - Voltage measured during normal operation
- Source position : Tuner FM
- No special features ON

1520	G2	3642	E8
1522	D5	3643	C8
1524	G5	3644	E8
1525	G29	3649	J8
1527	K25	3650	K8
1540	M29	3659	B13
1550	K29	3660	F13
1553	K26	3661	B13
1561	M27	3662	E13
1601	B23	3663	H13
2531	H20	3664	L13
2532	L20	3665	I13
2533	A16	3666	L13
2534	F16	3671	B16
2535	H16	3672	F16
2536	M16	3673	A18
2539	C26	3674	F18
2540	C27	3675	C16
2563	C29	3676	C16
2564	E15	3677	H16
2565	L15	3678	M16
2567	C18	3679	H16
2568	J18	3680	M16
2569	G29	3681	J16
2603	C20	3682	J16
2604	D20	3689	C19
2605	C21	3690	D19
2606	D21	3691	J19
2607	B22	3692	K19
2608	E22	3695	D19
2609	B20	3696	C18
2610	E20	3697	D18
2611	E21	3698	J19
2614	B21	3699	J18
2615	B21	3700	J18
2616	E21	3831	M28
2617	B20	3834	L28
2618	E20	3851	J21
2619	B23	3852	K21
2620	E23	3853	J20
2630	D16	3854	K20
2631	K16	3855	L21
2633	B16	3856	I21
2634	I16	3857	I20
2636	E17	3858	L20
2637	E16	3859	G28
2638	L17	3860	L23
2639	L16	3871	B11
2641	B8	3872	F11
2642	D8	3873	B11
2643	C8	3874	F11
2644	D8	3875	H11
2649	I8	3876	L11
2650	K8	3877	H11
2659	B11	3878	L11
2660	E11	3883	A13
2661	I11	3884	F13
2662	L11	3885	H13
2665	B11	3886	M13
2666	E11	3889	J22
2667	I11	3890	K22
2668	L11	3891	B18
2671	B12	3892	F18
2672	E12	3893	H18
2673	I12	3894	M18
2674	L12	3938	C22
2677	B13	3939	D22
2678	E13	4641	D4
2679	I13	4652	H29
2680	L13	4831	O28
2683	B12	4832	L29
2684	E12	6601	C22
2685	I12	6602	D21
2686	L12	6641	B19
2689	B14	6642	E19
2690	E14	6643	I19
2691	I14	6644	L19
2692	L14	6647	J21
2695	B13	6648	K21
2696	F13	6649	C28
2697	H13	6650	C26
2698	L13	7601a	D21
2831	N28	7601b	C21
2833	O29	7621	C22
2834	L28	7622	E22
2851	I20	7641	B9
2852	L20	7642	I9
2853	J20	7644	C26
2854	K20	7651	A19
2855	J21	7652	F18
2856	K21	7653	H19
2857	L21	7654	L19
2858	L21	7657	C18
2860	H21	7658	J18
2861	F6	7660a	I21
2871	A11	7660b	K21
2872	F11	7661	I22
2873	H11	7662	K22
2874	M11	9643	D4
2877	A14	9645	D6
2878	F14	9647	H6
2879	H14	9654	M22
2880	M14		
2926	H21		
3560	I21		
3561	C25		
3562	C26		
3563	L21		
3601	B19		
3602	E19		
3603	B20		
3604	E20		
3605	C20		
3606	D20		
3607	C21		
3608	D21		
3609	B21		
3610	E21		
3611	B22		
3612	E22		
3627	E21		
3629	B20		
3641	B8		

1251	A1	1258	E3	2260	C8	2271	I6	2277	L6	2287	K4	3257	L3	3270	F7	3294	H6	6259	I4	6265	J6	6276	E6	7258	E6	9260	E4
1253	I1	1265	G9	2266	I3	2273	K5	2278	M3	2290	H5	3258	M3	3271	F7	3295	I7	6260	H6	6267	L6	6280	F6	7908	H6		
1254	L1	2251	B3	2268	J4	2274	K6	2281	H5	2295	H6	3266	F7	3291	G4	6251	B4	6261	J3	6268	K2	6281	F6	7910	G6		
1255	F1	2254	C4	2269	J5	2275	K4	2282	H7	3254	J5	3268	E5	3292	H7	6257	I3	6262	J3	6274	D3	7253	M3	9251	B3		
1257	L9	2259	D8	2270	I5	2276	L5	2283	F4	3256	M4	3269	E5	3293	H6	6258	I3	6263	J4	6275	D2	7257	E5	9252	C3		

MONOBOARD SUPPLY PART FR735


1251
To 1073 Mains trafo
54V~
9251
9252
6251 D5SBA20
2251 100n
2254 100n
2260 4700µ
2259 4700µ
+VL +36V
-VL -36V
6275 1N4003GP
6274 1N4003GP
1258 T1A6
7257 BC327-25
7258 BC327-25
-32,6V
6276 BZX79/C5V6
6280 BZX79/C15
6281 BZX79/C15
3268 3k3
3269 3k3
2283 220µ
-30V CIRCUIT
9260
3266 22k
3270 47E
3271 47E
-30 -30V
To Left & Right & Center Amplifier
1255
f1
f2
amp prot
5V~
4V
-23,8V
To 1072 Mains trafo
3291 10E
7910 BD534FP
2281 100n
2290 10µ
3293 10k
3294 10k
2295 10n
3292 15k
2282 470n
7908 BC857B
3295 15k
-12 -13,5V
1265
To 1902 Center & Surround amplifier
1253
To 1071 Mains trafo
22V~
6257 1N4003GP
6261 1N4003GP
2266 100n
6258 6259 6262 6263 4x 1N4003GP
2268 100n
2269 2200µ
6260 L7812CP
2270 100n
2271 470n
+12 +12V
3254 0E33
6265 L7805CP
2273 100n
2274 470n
+5 +5V
6268 1N4003GP
2287 3300µ
2275 1000µ
3257 0E33
6267 L7805CP
2276 100n
2277 470n
+5D +5V
1254
MFD
Relay
3258 180k
3256 10k
7253 BC847B
2278 1µ
POWER DOWN CIRCUIT
To 0051 Mains board
1257
amp pd
amp stdby
To 1426 Front Part
REF
DIG

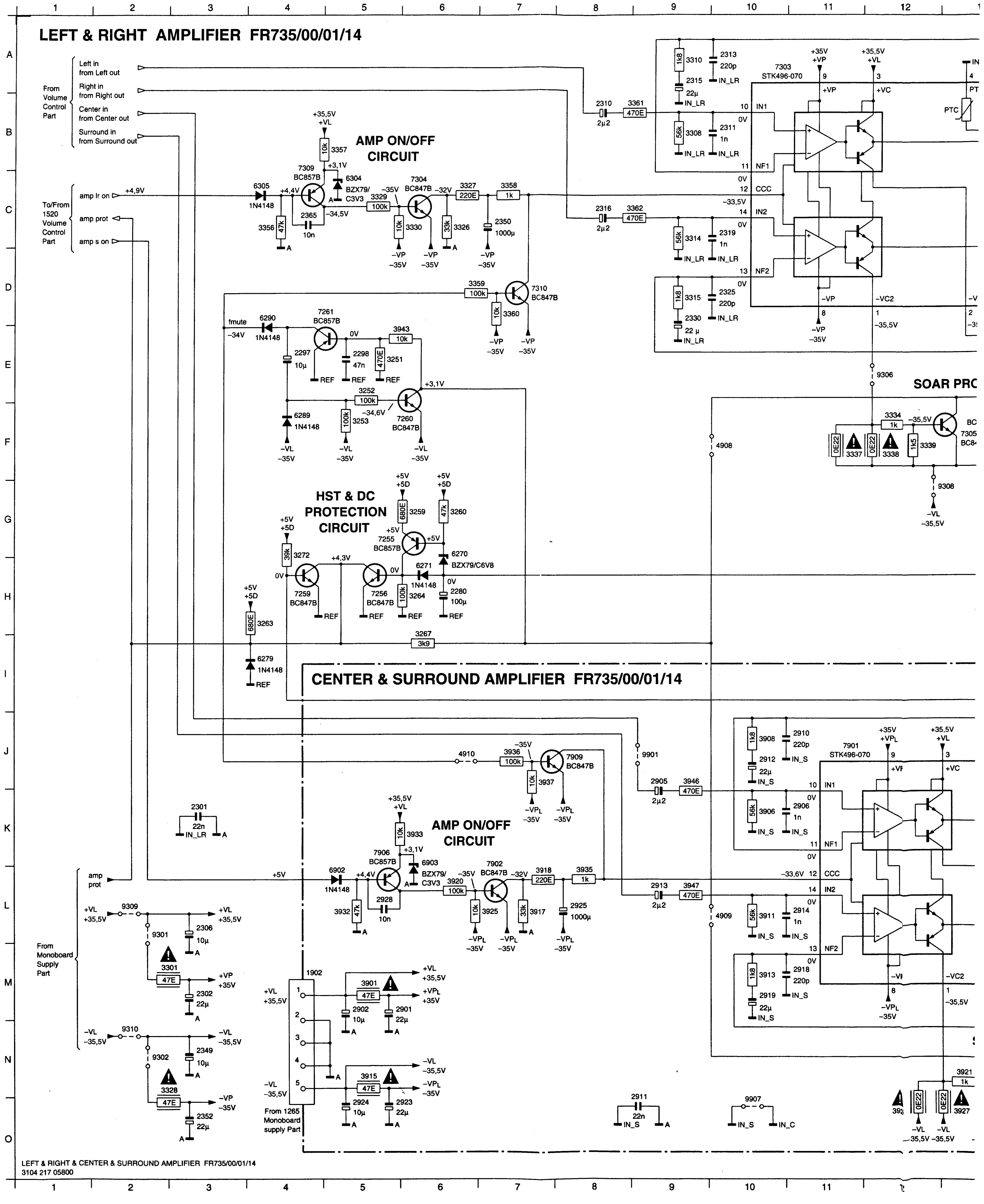
.....V - Voltage measured during normal operation
- Source position : Tuner FM
- No special features ON

[...V] Stand by

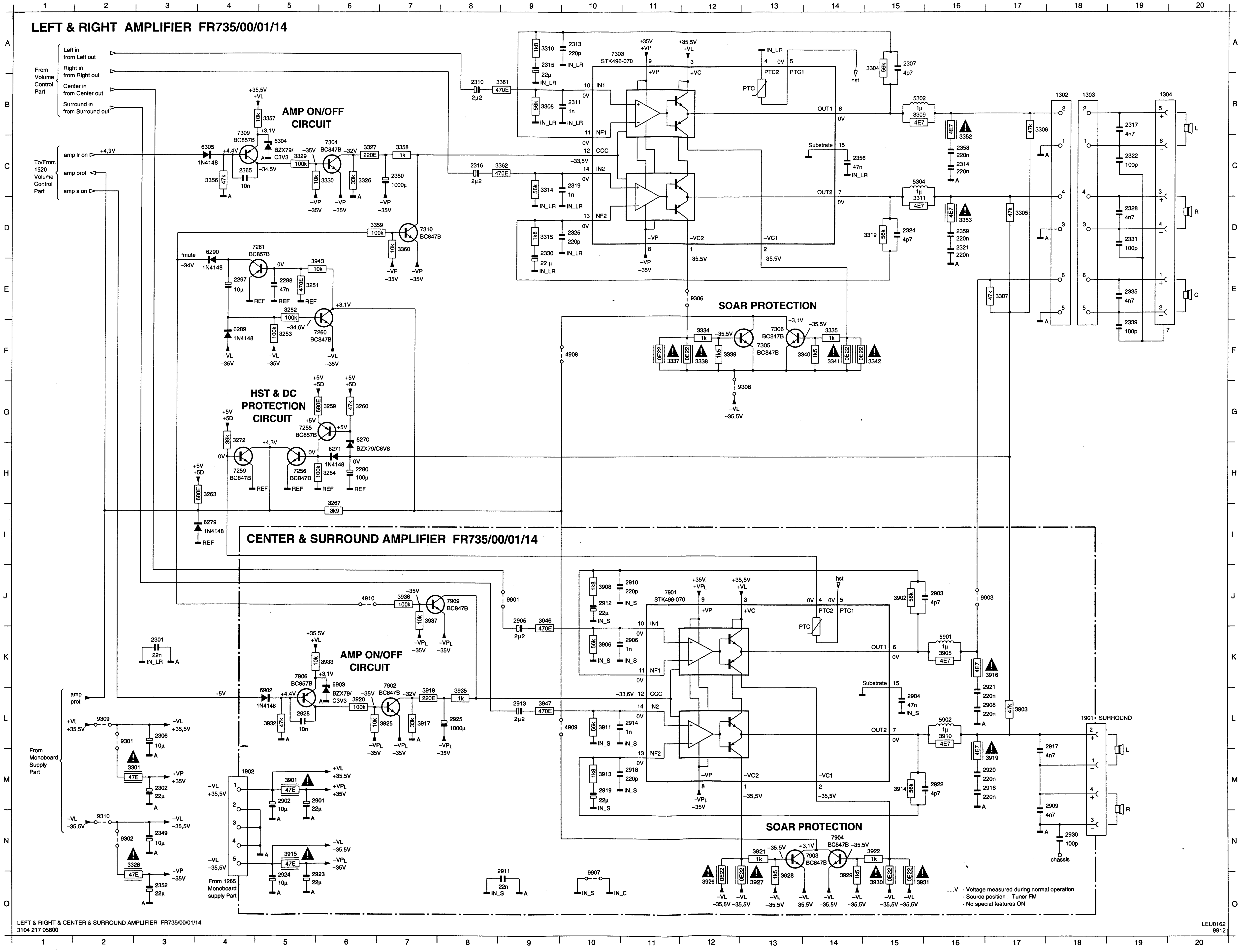
Monoboard Supply Part FR735
3104 217 05800

LEU0169
9912

LEFT & RIGHT AMPLIFIER FR735/00/01/14


From Volume Control Part
Left in from Left out
Right in from Right out
Center in from Center out
Surround in from Surround out
To/From 1520 Volume Control Part
amp lr on
amp prot
amp s on
AMP ON/OFF CIRCUIT
7309 BC857B
7304 BC847B
6304 BZX79/C3V3
6305 1N4148
3357 10k
3329 100k
3327 220E
3358 1k
2350 1000µ
7310 BC847B
3359 100k
3360 10k
fmute
6290 1N4148
7261 BC857B
3943 10k
3251 470E
2297 10µ
2298 47n
7260 BC847B
3252 100k
3253 100k
6289 1N4148
HST & DC PROTECTION CIRCUIT
7255 BC857B
3259 680E
3260 47k
6270 BZX79/C6V8
6271 1N4148
7259 BC847B
7256 BC847B
3272 39k
3264 100k
2280 100µ
3263 680E
6279 1N4148
3267 3k9
7303 STK496-070
2310 2µ2
3361 470E
2316 2µ2
3362 470E
3310 1k8
2313 220p
3308 56k
2311 1n
3314 56k
2319 1n
3315 1k8
2325 220p
PTC
SOAR PRC
3334 1k
3337 0E22
3338 0E22
3339 1k5
9306
9308
4908
CENTER & SURROUND AMPLIFIER FR735/00/01/14
7909 BC847B
3936 100k
3937 10k
4910
9901
AMP ON/OFF CIRCUIT
7906 BC857B
7902 BC847B
6903 BZX79/C3V3
6902 1N4148
3920 100k
3918 220E
3935 1k
2925 1000µ
2905 2µ2
3946 470E
2913 2µ2
3947 470E
7901 STK496-070
3908 1k8
2910 220p
3906 56k
2906 1n
3911 56k
2914 1n
3913 1k8
2918 220p
4909
2301 22n
From Monoboard Supply Part
9309
9310
3301 47E
3328 47E
1902
From 1265 Monoboard supply Part
3901 47E
3915 47E
2911 22n
9907
3921 1k
3927

LEFT & RIGHT & CENTER & SURROUND AMPLIFIER FR735/00/01/14
3104 217 05800


LEFT & RIGHT AMPLIFIER FR735/00/01/14
CENTER & SURROUND AMPLIFIER FR735/00/01/14
From Volume Control Part
Left in from Left out
Right in from Right out
Center in from Center out
Surround in from Surround out
To/From 1520 Volume Control Part
amp Ir on
amp prot
amp s on
AMP ON/OFF CIRCUIT
HST & DC PROTECTION CIRCUIT
SOAR PROTECTION
STK496-070
7303
7901
IN1
IN2
NF1
NF2
CCC
OUT1
OUT2
Substrate
PTC
PTC1
PTC2
+VP
+VC
-VP
-VC1
-VC2
hst
fmute
1302
1303
1304
1901 - SURROUND
1902
From Monoboard Supply Part
From 1265 Monoboard supply Part
amp prot
chassis
....V - Voltage measured during normal operation
- Source position: Tuner FM
- No special features ON

LEFT & RIGHT & CENTER & SURROUND AMPLIFIER FR735/00/01/14
3104 217 05800

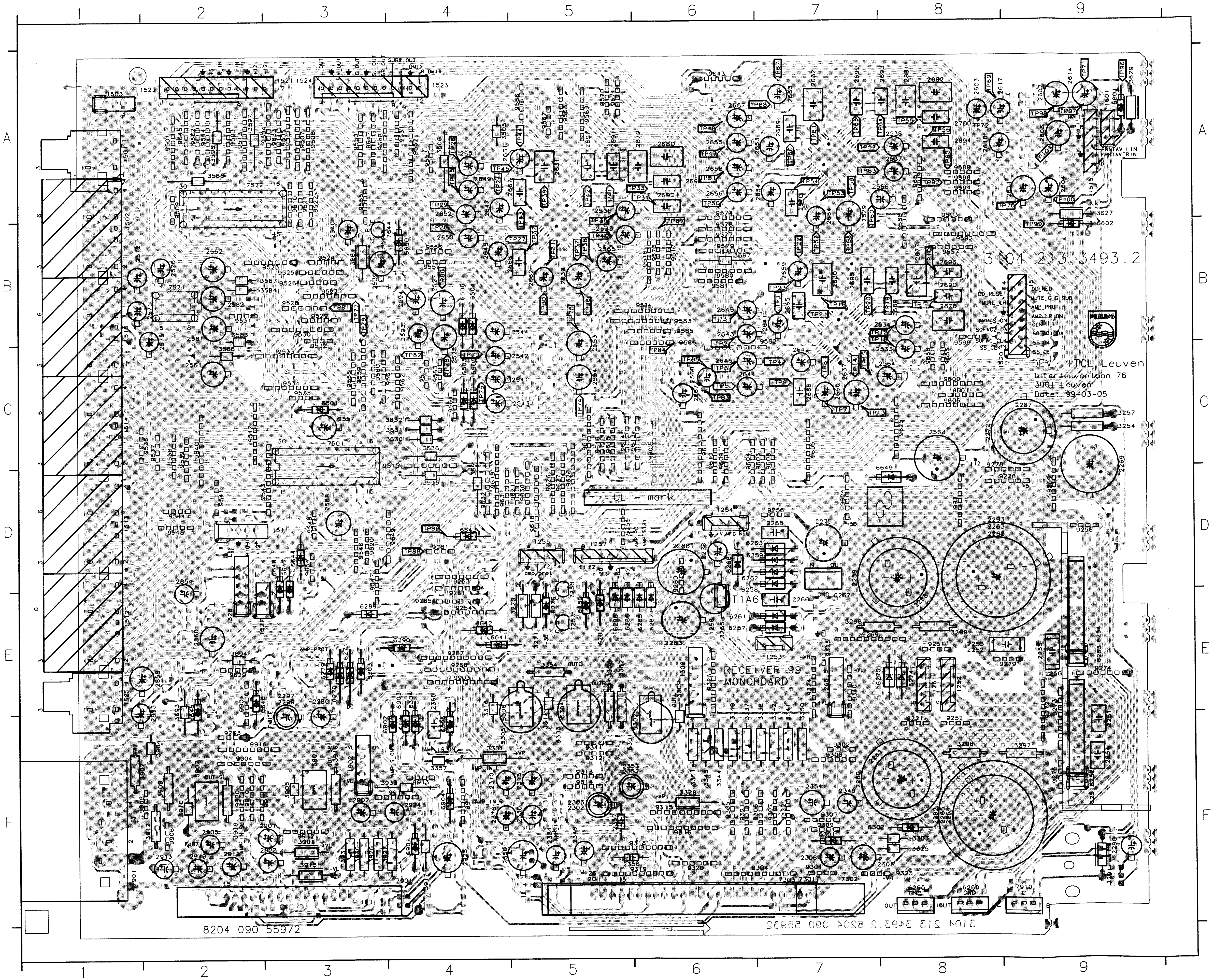
LEU0162
9912

ft & Right
Center
mplifier

LEU0169
9912

1302	B18
1303	B18
1304	B19
1901	L18
1902	M4
2280	H6
2297	E4
2298	E5
2301	K3
2302	M3
2306	L3
2307	A15
2310	B8
2311	B10
2313	A10
2314	C16
2315	A9
2316	C8
2317	B19
2319	C10
2321	D16
2322	C19
2324	D15
2325	D10
2328	D19
2330	D9
2331	D19
2335	E19
2339	F19
2349	N3
2350	C7
2352	O3
2356	C14
2358	C16
2359	D16
2365	C4
2901	M5
2902	M5
2903	J16
2904	L15
2905	J9
2906	K11
2908	L16
2909	M18
2910	J11
2911	O8
2912	J10
2913	L9
2914	L11
2916	M16
2917	L18
2918	M11
2919	M10
2920	M16
2921	L16
2922	M16
2923	O5
2924	O5
2925	L8
2928	L5
2930	N18
3251	E5
3252	E5
3253	F5
3259	G6
3260	G6
3263	H4
3264	H6
3267	I6
3272	H4
3301	M2
3304	A15
3305	D17
3306	B17
3307	E17
3308	B9
3309	B15
3310	A9
3311	D15
3314	C9
3315	D9
3319	D15
3326	C6
3327	C6
3328	N2
3329	C5
3330	C6
3334	F12
3335	F14
3337	F11
3338	F12
3339	F12
3340	F13
3341	F14
3342	F15
3352	C16
3353	D16
3356	C4
3357	B5
3358	C7
3359	D6
3360	D7
3361	B8
3362	C8
3901	M5
3902	J15
3903	L17
3905	K16
3906	K10
3908	J10
3910	L16
3911	L10
3913	M10
3914	M15
3915	N5
3916	K17
3917	L7
3918	L7
3919	M17
3920	L6
3921	N13
3922	N15
3925	L7
3926	O12
3927	O13
3928	O13
3929	O14
3930	O15
3931	O15
3932	L5
3933	K6
3935	L8
3936	J7
3937	J7
3943	E5
3946	J9
3947	L9
4908	F10
4909	L10
4910	J6
5302	B15
5304	C15
5901	K16
5902	L16
6270	G6
6271	H6
6279	I4
6289	F4
6290	D4
6304	C5
6305	C4
6902	L5
6903	K6
7255	G5
7256	H5
7259	H4
7260	F5
7261	D4
7303	A10
7304	C6
7305	F13
7306	F13
7309	C4
7310	D7
7901	J11
7902	L7
7903	N14
7904	N14
7906	K5
7909	J8
9301	L2
9302	N2
9306	E12
9308	G12
9309	L2
9310	N2
9901	J9
9903	J16
9907	O10

MONO BOARD - COMPONENT SIDE VIEW


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
3104 213 3493.2
DEV. ITCL Leuven
Interleuvenlaan 76
3001 Leuven
Date: 99-03-05
PHILIPS
RECEIVER 99
MONOBOARD
UL - mark
T1A6
8204 090 55972
3104 213 3493.2 8204 090 55932
FRNTAV_LIN
FRNTAV_RIN
DD_RED
DD_RESET
MUTE_C_S_SUB
MUTE_LR
AMP_PROT
AMP_LR_ON
AMP_S_ON
CLK
SOFAC2_DA
SOFAC1_DA
SOFAC_CLK
SS_DA
SS_CE
SS_CL
AMP_PROT
AMP_S_ON
AMP_LR_ON
AMP_IN_L
OUTC
OUTR
OUTL
OUT
IOUT
GND
IN
-VH
-VL
+VL
+VP
-VP
1503
1522
1521
1524
1523
1501
1502
1254
1255
1257
1253
7572
7571
7501
2287
2263
2262
2293
2261
2260
2259
2258
2283
2286
2275
3254
3257
7910

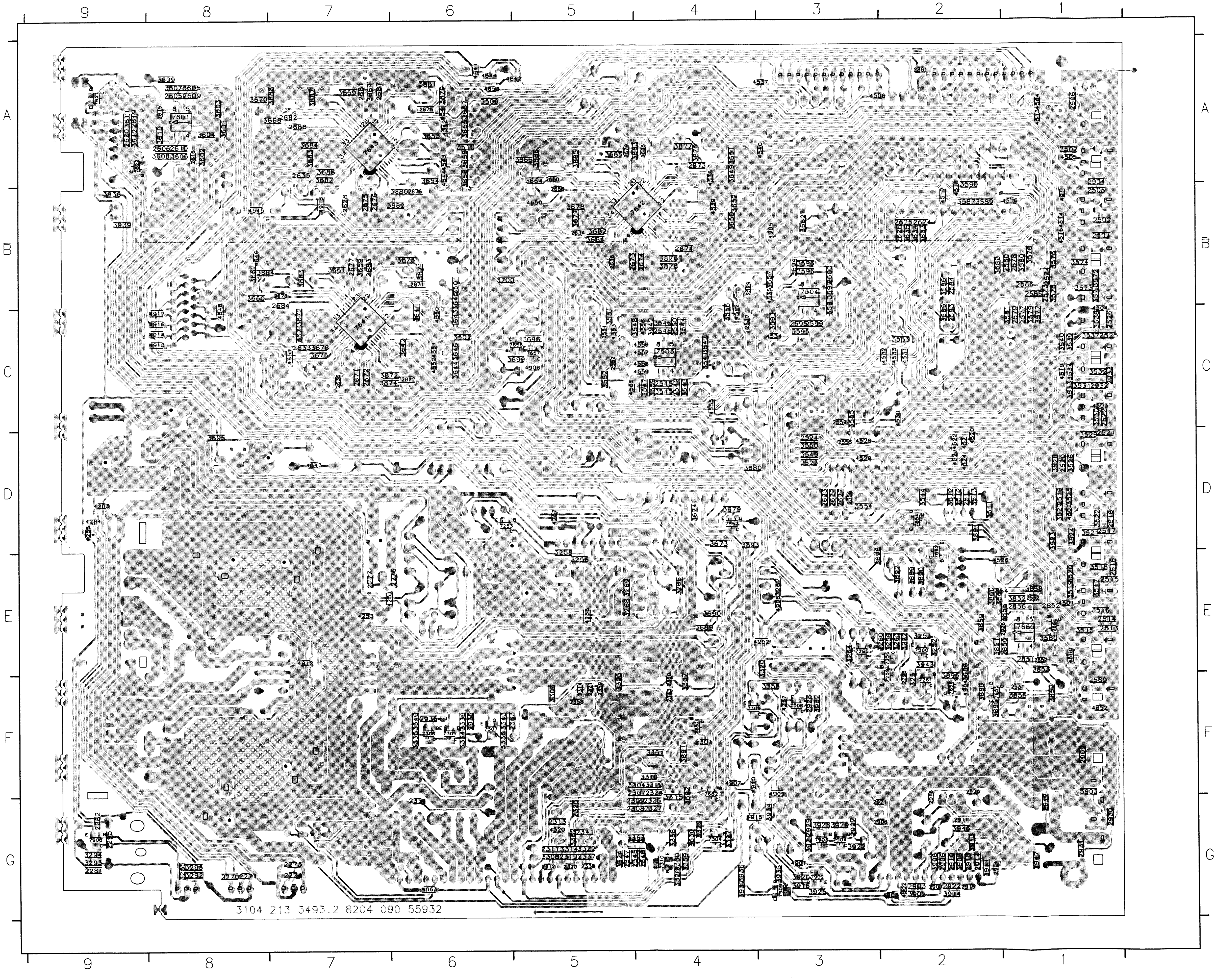
MONO BOARD - MAPPING COMPONENT SIDE VIEW

1251	E8	2350	F4	2655	A6	3345	F6	6274	E8	9276	D9	9545	D2	9631	D4
1252	E8	2352	F5	2656	A6	3349	E6	6275	E7	9278	C8	9546	D3	9632	D4
1253	E7	2353	F5	2657	A6	3350	E7	6276	E5	9279	E9	9547	D3	9633	A3
1254	D6	2354	F7	2658	A6	3351	F6	6279	E3	9281	D4	9548	D3	9643	A6
1255	D5	2356	F5	2659	B7	3352	E5	6280	E5	9301	F7	9549	D4	9645	A2
1257	D5	2357	F5	2660	C7	3353	E5	6281	E5	9302	F7	9550	A3	9647	A3
1258	E6	2365	E4	2661	A4	3354	E5	6285	E6	9303	F7	9551	A4	9648	A3
1265	E7	2527	B4	2662	B5	3357	F4	6286	E5	9304	F7	9552	A4	9651	A8
1302	E6	2528	C4	2663	A7	3505	A4	6287	E6	9305	F6	9553	A4	9654	D3
1501	A1	2533	C8	2664	A7	3506	A4	6288	E5	9306	F6	9555	A3	9655	C8
1502	A1	2534	B8	2665	B7	3535	D4	6289	E3	9307	F7	9556	B4	9656	C8
1503	A1	2535	B5	2666	C7	3536	C4	6290	E4	9308	F7	9557	B4	9657	B8
1511	D3	2536	A5	2667	A5	3561	B3	6301	F7	9309	F7	9558	C3	9901	E2
1512	E1	2537	A8	2668	B5	3566	C2	6302	F7	9310	E7	9559	C3	9903	E4
1513	D1	2538	A8	2669	A7	3567	B3	6303	E3	9311	F5	9560	C3	9904	F2
1514	C1	2539	B3	2670	A7	3583	B2	6304	E4	9312	F5	9561	C4	9905	F1
1515	A9	2540	B3	2689	B8	3584	B3	6305	F4	9313	F5	9562	C4	9906	F2
1516	B1	2541	C5	2690	B8	3588	A2	6501	C3	9314	F5	9563	C4	9907	C6
1520	C9	2542	C5	2691	A5	3597	A2	6503	C4	9315	F6	9564	C4	9910	F2
1521	A3	2543	C5	2692	A6	3598	A2	6504	B4	9316	F6	9566	A5	9911	F3
1522	A2	2544	B5	2693	A8	3627	A9	6505	C4	9318	F6	9567	A5	9912	F3
1523	A4	2553	B5	2694	A8	3629	A9	6506	B4	9319	F6	9568	A5	9913	F4
1524	A3	2554	C5	2695	B7	3630	C4	6601	A9	9320	F6	9569	A5	9914	F4
1525	E1	2557	C3	2696	B8	3631	C4	6602	B9	9321	F6	9570	A5	9916	F2
1526	E2	2558	D3	2697	A5	3632	C4	6641	E4	9322	F7	9571	A5	9917	F4
1527	E2	2561	C2	2698	A6	3691	C4	6642	E4	9323	F8	9573	B6	9920	F2
1601	A9	2562	B2	2699	A7	3693	E2	6643	D4	9324	E7	9574	A6	9921	D8
1901	F1	2563	C8	2700	A8	3694	E2	6644	D3	9325	E7	9577	B6		
1902	F3	2564	C8	2853	E2	3697	B6	6645	E2	9326	E6	9578	B6		
2251	F9	2565	B5	2854	D2	3901	F3	6646	E2	9501	A2	9579	B6		
2252	E8	2566	A8	2858	E2	3904	F2	6647	D3	9502	A2	9580	B6		
2253	E8	2567	C6	2860	E2	3905	F3	6648	D3	9503	A2	9581	B6		
2254	F9	2568	C6	2877	B8	3907	F2	6649	D8	9504	A3	9582	B7		
2255	E9	2571	B2	2878	B8	3909	F2	6650	B4	9505	A3	9583	B6		
2256	E9	2572	B1	2879	A6	3910	F2	6901	F4	9507	A3	9584	B6		
2258	E8	2575	B2	2880	A6	3912	F2	6902	F3	9508	A3	9585	B6		
2259	D7	2576	B2	2881	A8	3915	F3	6903	E4	9509	A2	9586	B6		
2260	F7	2581	B2	2882	A8	3916	F3	6904	F4	9510	A3	9588	B8		
2261	F7	2582	B2	2901	F3	3917	F4	7257	E5	9511	C4	9589	A8		
2262	D8	2593	B4	2902	F3	3919	F2	7258	D5	9513	A2	9590	A8		
2263	D8	2594	B4	2905	F2	3926	F3	7301	F7	9514	A2	9591	A8		
2264	F8	2603	A8	2912	F2	3927	F3	7302	F7	9515	C4	9592	B8		
2265	F8	2604	A9	2913	F2	3930	F3	7303	F7	9516	B6	9593	A8		
2266	E7	2607	A9	2919	F2	3931	F3	7501	C3	9517	B6	9599	C8		
2268	D7	2608	A9	2923	F3	3933	F4	7571	B2	9520	D3	9600	C8		
2269	C9	2611	A9	2924	F4	5301	F5	7572	A2	9521	A3	9601	C8		
2272	C8	2614	A9	2925	F4	5302	F6	7644	B4	9522	A3	9603	C7		
2275	D7	2617	A8	3254	C9	5303	F5	7901	F4	9523	B3	9604	C6		
2278	D6	2618	A8	3257	C9	5304	E5	7910	F9	9524	B3	9605	C7		
2280	E3	2629	A7	3265	E6	5305	F4	9251	E8	9525	B3	9606	C8		
2283	E6	2630	B7	3270	E5	5306	E4	9252	F8	9526	B3	9608	C7		
2287	C9	2631	A5	3271	E5	5901	F3	9253	D4	9527	B3	9609	C6		
2288	D6	2632	A7	3291	F9	5902	F2	9254	E4	9528	B3	9610	C6		
2290	F9	2637	C7	3296	F8	6251	F9	9255	D5	9529	B3	9611	C6		
2292	F8	2639	B5	3297	F9	6252	F9	9256	D7	9530	B3	9613	C6		
2293	D8	2641	B7	3298	E7	6253	E9	9258	D9	9531	B2	9614	C5		
2297	E3	2642	C7	3299	E8	6254	E9	9259	D9	9532	C3	9615	C5		
2299	E3	2643	B6	3301	F4	6257	E6	9260	D6	9533	C3	9616	C5		
2302	F5	2644	C6	3303	F8	6258	E6	9261	E4	9534	C3	9617	C5		
2303	F5	2645	B6	3309	E6	6259	D6	9263	F2	9535	C3	9618	D5		
2305	F8	2646	C6	3311	F5	6260	F8	9265	E4	9536	C2	9619	D4		
2306	F7	2647	A4	3316	E4	6261	E6	9267	E4	9537	C2	9621	D5		
2310	F4	2648	B4	3325	F8	6262	D6	9268	E4	9538	C2	9624	D7		
2315	F5	2649	A4	3328	F6	6263	D6	9269	E7	9539	C2	9625	C8		
2316	F4	2650	B4	3337	E6	6265	F8	9271	F8	9540	C2	9626	D5		
2330	F5	2651	A4	3338	E7	6267	E7	9272	E9	9541	D2	9627	D5		
2334	F5	2652	A4	3341	E7	6268	D6	9273	E9	9542	C2	9628	D5		
2346	F5	2653	A7	3342	E7	6270	E3	9274	E9	9543	D2	9629	E2		
2349	F7	2654	A7	3344	F6	6271	E3	9275	F9	9544	D2	9630	D5		

MONO BOARD - MAPPING COPPER SIDE VIEW

2270	G8	2556	D3	2906	G2	3359	G4	3582	B2	3685	F2	3942	C4	4644	A6
2271	G8	2559	C3	2907	G2	3360	G4	3585	C2	3686	E2	3943	E2	4649	B8
2273	G7	2569	F1	2908	G2	3361	F4	3586	B2	3687	A7	3946	G2	4650	B5
2274	G7	2573	B1	2909	F1	3362	G5	3587	B2	3688	A7	3947	G1	4651	C7
2276	E6	2574	B1	2910	G2	3363	G4	3589	B2	3689	E4	4251	E7	4652	F1
2277	E7	2577	C1	2911	G2	3501	B6	3590	B2	3690	E4	4252	E3	4653	A6
2281	G9	2578	B1	2914	G2	3502	C6	3591	B3	3692	E2	4253	E7	4901	G3
2282	G9	2579	C1	2915	G2	3509	A6	3592	B3	3695	D8	4257	F3	4902	G2
2295	G9	2580	B1	2916	G2	3510	A6	3593	C3	3696	C5	4258	E5	4903	G2
2298	E2	2583	C2	2917	G1	3511	D2	3594	B3	3698	E3	4283	D9	4904	F2
2301	F4	2584	B2	2918	G2	3512	D2	3595	C3	3699	C5	4284	D9	4905	B3
2307	F5	2585	B1	2920	G2	3513	D2	3596	B3	3700	B6	4285	D9	4906	C5
2308	G5	2586	B1	2921	F2	3514	D2	3601	A8	3851	E2	4287	D5	4907	F4
2309	G5	2595	C3	2922	G2	3515	E1	3602	A8	3852	E1	4320	G5	4908	E3
2311	G5	2596	B3	2926	E1	3516	E1	3603	A8	3853	F1	4501	E1	4909	F3
2312	G5	2599	C3	2927	G3	3517	E1	3604	A8	3854	E1	4502	D1	4910	F3
2313	G5	2600	B3	2928	F3	3518	E1	3605	A8	3855	F1	4503	C1	4911	B1
2314	F5	2605	A8	2929	G3	3519	E1	3606	A8	3856	E2	4504	B1	4912	E7
2319	G5	2606	A8	2930	G1	3520	E1	3607	A8	3857	F1	4505	A1	4913	C8
2320	G5	2609	A8	2931	G1	3521	D1	3608	A8	3858	E1	4506	A3	4914	C9
2321	F5	2610	A8	2932	C1	3522	D1	3609	A8	3859	E2	4512	B4	4915	G4
2324	F4	2615	A8	2933	C1	3523	D1	3610	A8	3860	E2	4513	A1	4916	C9
2325	F5	2616	A8	2934	A1	3524	D1	3611	A9	3871	B6	4514	B1	4917	C9
2326	G4	2619	A9	2935	F6	3525	D1	3612	A9	3872	C6	4515	B1	4918	B7
2327	G4	2620	A9	2936	F6	3526	D1	3633	B2	3873	B6	4516	B1	7253	D5
2333	F4	2622	D3	3251	F2	3527	D1	3634	B2	3874	C6	4517	B2	7255	E3
2337	G5	2623	D3	3252	E2	3528	D1	3635	B2	3875	A4	4518	B2	7256	E2
2338	G5	2624	B2	3253	E2	3529	D1	3641	B6	3876	B4	4519	C1	7259	F2
2341	G5	2625	B2	3255	G8	3530	C1	3642	C6	3877	A4	4520	D2	7260	E2
2345	G4	2626	B2	3256	E5	3531	C1	3643	B6	3878	B4	4521	C2	7261	E2
2347	G5	2627	D3	3258	E5	3532	C1	3644	C6	3879	A6	4522	C2	7304	G4
2348	G4	2628	B7	3259	E2	3533	C1	3645	C6	3880	A6	4523	D2	7305	F6
2351	G6	2633	C7	3260	E2	3534	C1	3646	C6	3881	A6	4524	D2	7306	F6
2358	F5	2634	B5	3263	E2	3537	C1	3649	A4	3882	B6	4526	E2	7307	F6
2359	F5	2635	A7	3264	E3	3538	C1	3650	B4	3883	B7	4528	D3	7309	F4
2360	F4	2636	C7	3266	E4	3539	C1	3651	A4	3884	B7	4529	D3	7310	G4
2363	F5	2638	B5	3267	E3	3540	C1	3652	B4	3885	A5	4530	C2	7503	C4
2501	B1	2671	C7	3268	E5	3541	C4	3653	A6	3886	A5	4531	C2	7504	B3
2502	B1	2672	C7	3269	E5	3542	C4	3654	B6	3887	A7	4532	C3	7601	A8
2505	B1	2673	B4	3272	E2	3543	C4	3655	A6	3888	A7	4533	C2	7621	A9
2506	A1	2674	B4	3292	G8	3544	C4	3656	A6	3889	E2	4534	C3	7622	A8
2507	A1	2675	B7	3293	G9	3545	C4	3657	A6	3890	E2	4535	B3	7641	B7
2511	D2	2676	B7	3294	G9	3546	C4	3658	A6	3891	F4	4537	A3	7642	A5
2512	D2	2677	B7	3295	G8	3547	C4	3659	B7	3892	G4	4538	A4	7643	A7
2513	E1	2678	B7	3304	F4	3548	C4	3660	B8	3893	E4	4539	B4	7651	F4
2514	E1	2679	A5	3305	F5	3549	D3	3661	B7	3894	D2	4540	A3	7652	G4
2515	E1	2680	A5	3306	F5	3550	D3	3662	B8	3895	F2	4541	A6	7653	D4
2516	E1	2681	A7	3307	F4	3551	B5	3663	A4	3896	E2	4542	A6	7654	D2
2517	D1	2682	A7	3308	G5	3552	C5	3664	A5	3902	G2	4543	A6	7655	F2
2518	D1	2683	B7	3310	F4	3553	C2	3665	A5	3903	F1	4544	A6	7656	F2
2519	D1	2684	C7	3314	G5	3554	D3	3666	A6	3906	G2	4545	B8	7657	C5
2520	D1	2685	A4	3315	F4	3555	C3	3667	A7	3908	G2	4548	C8	7658	C5
2521	D1	2686	B5	3319	F4	3556	B4	3668	A8	3911	G2	4550	C6	7660	E1
2522	C1	2687	A7	3320	F3	3557	B3	3669	A7	3913	G2	4551	C6	7661	E1
2523	D3	2688	A7	3322	G5	3559	C4	3670	A8	3914	G2	4552	C6	7662	E2
2524	D3	2851	E1	3323	G4	3560	E1	3671	C7	3918	G3	4553	C5	7902	G3
2525	C1	2852	E1	3324	G5	3562	B3	3672	B7	3920	G3	4555	C4	7903	G3
2526	C1	2855	E2	3326	G4	3563	E2	3673	D4	3921	G3	4556	C4	7904	G3
2529	B4	2856	E1	3327	G4	3571	B1	3674	D4	3922	G3	4557	C4	7906	F3
2530	C4	2857	E1	3329	G4	3572	B1	3675	C7	3925	G3	4558	C4	7908	G9
2531	F1	2861	A2	3330	G4	3573	B1	3676	C7	3928	G3	4559	C4	7909	G3
2532	E1	2871	B6	3334	F6	3574	B1	3677	B5	3929	G3	4560	E1		
2545	C4	2872	C6	3335	F6	3575	B1	3678	B5	3932	F3	4563	G6		
2546	C4	2873	A4	3336	F6	3576	B1	3679	D4	3934	G3	4564	A1		
2549	C4	2874	B4	3339	F6	3577	C1	3680	D3	3935	G3	4565	C4		
2550	C4	2875	A6	3340	F6	3578	B1	3681	B5	3936	G4	4566	C4		
2551	C5	2876	B6	3343	F6	3579	C1	3682	B5	3937	G4	4641	A6		
2552	C5	2903	G2	3356	F3	3580	B1	3683	A7	3938	B9	4642	A5		
2555	D3	2904	G2	3358	G4	3581	C1	3684	A7	3939	B9	4643	D7		

MONO BOARD - COPPER SIDE VIEW


9
8
7
6
5
4
3
2
1
A
B
C
D
E
F
G
7601
7643
7642
7641
7503
7504
7660
3104 213 3493.2 8204 090 55932

EXPLODED VIEW

MECHANICAL PARTS

1	4822 459 05293	FRONT CAB ASSY FR735
2	4822 410 12442	BUTTON HINGE ASSY SURROUND
3	4822 410 12435	BUTTONS HINGE TUNER
4	4822 410 12443	BUTTON HINGE ASSY MENU
5	4822 410 12436	BUTTONS HINGE BASS TREBLE
6	4822 410 12437	BUTTONS EASY LINK
8	4822 380 10274	LIGHT GUIDE SURROUND
11	4822 454 13465	ORN. PLATE ASSY FR735/00/14
11	4822 454 13467	ORN. PLATE ASSY FR735/01
12	4822 532 13147	RING KNOB VOLUME
13	4822 532 13148	RING KNOB SOURCE SELECTOR
14	4822 450 10664	WINDOW DISPLAY ASSY
25	4822 410 12438	KNOB VOLUME
26	4822 410 12439	KNOB SOURCE SELECTOR
27	4822 410 12441	KNOB MENU NAV
28	4822 459 10887	BADGE PHILIPS ASSY
36	4822 691 10773	LEG SILVER
38	4822 462 42158	FOOT BLACK
115	4822 535 10638	POWER ROD
116	4822 462 11176	POWER CAP
117	4822 532 60948	BUSH
125	4822 442 01817	COVERPLATE

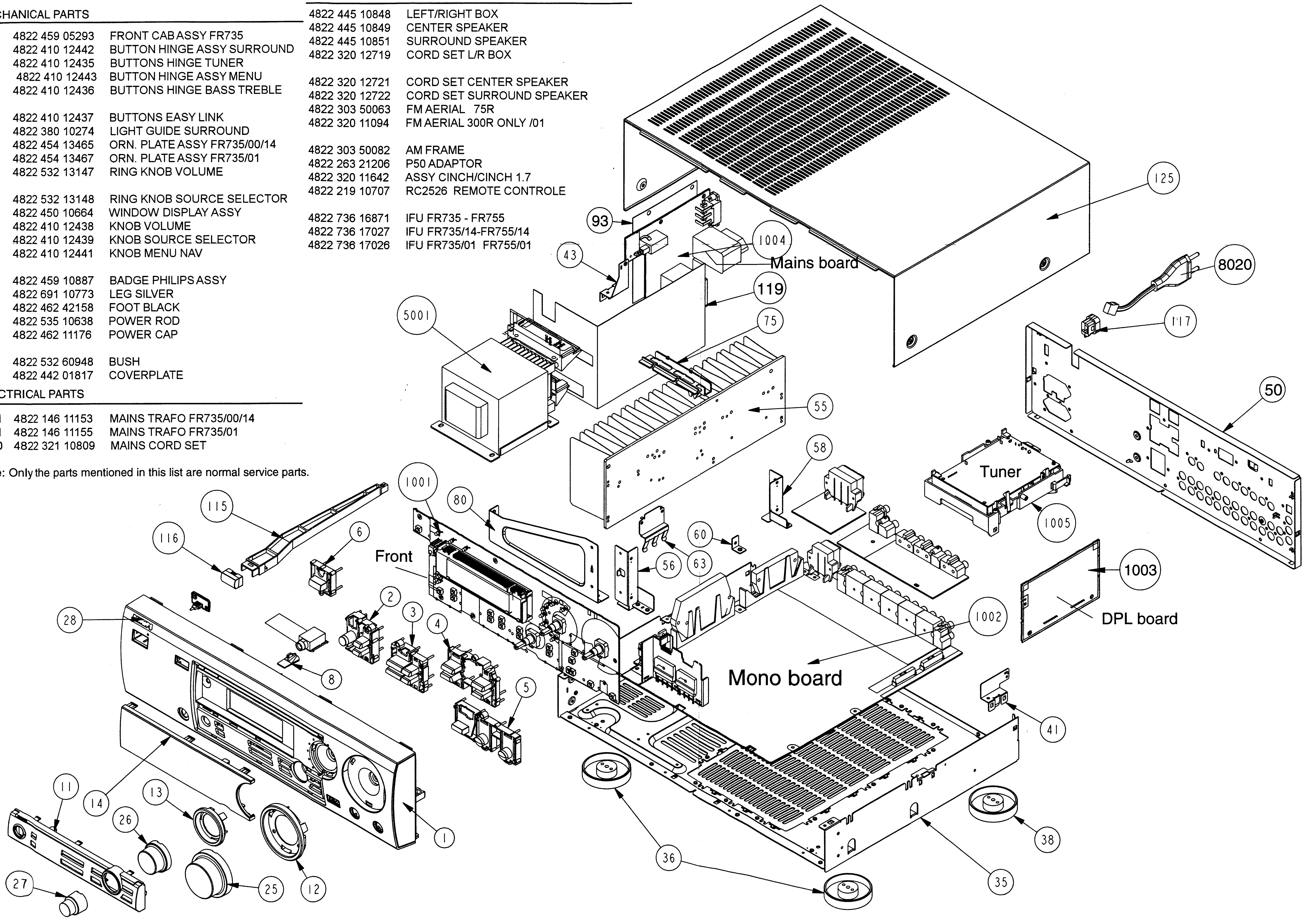
ELECTRICAL PARTS

5001	4822 146 11153	MAINS TRAFO FR735/00/14
5001	4822 146 11155	MAINS TRAFO FR735/01
8020	4822 321 10809	MAINS CORD SET

Note: Only the parts mentioned in this list are normal service parts.

MISCELLANEOUS PARTS

4822 445 10848	LEFT/RIGHT BOX
4822 445 10849	CENTER SPEAKER
4822 445 10851	SURROUND SPEAKER
4822 320 12719	CORD SET L/R BOX
4822 320 12721	CORD SET CENTER SPEAKER
4822 320 12722	CORD SET SURROUND SPEAKER
4822 303 50063	FM AERIAL 75R
4822 320 11094	FM AERIAL 300R ONLY /01
4822 303 50082	AM FRAME
4822 263 21206	P50 ADAPTOR
4822 320 11642	ASSY CINCH/CINCH 1.7
4822 219 10707	RC2526 REMOTE CONTROLE
4822 736 16871	IFU FR735 - FR755
4822 736 17027	IFU FR735/14-FR755/14
4822 736 17026	IFU FR735/01 FR755/01



SCALE 0.250

ELECTRICAL PARTSLIST - MONO BOARD

MISCELLANEOUS

1258 ▲	4822 071 51602	19372(1.6A)
1304	4822 265 11607	6P YKD21-0280
1512	4822 267 31823	YKC21-3424
1513	4822 267 31823	YKC21-3424
1514	4822 267 31823	YKC21-3424
1520	4822 267 10551	15FE-BT
1525	4822 265 11608	2P YKC21-4053
1540	4822 265 20542	CINCH 2P IN/00/01/14
1550	4822 267 31729	CINCH
1901	4822 265 11609	4P YKD21-0279

CAPACITORS

2251	4822 121 41853	100NF10% 100V
2254	4822 121 41853	100NF10% 100V
2259	4822 124 80415	4700UF20% 50V
2260	4822 124 80415	4700UF20% 50V
2266	5322 121 42386	100NF 5% 63V
2268	5322 121 42386	100NF 5% 63V
2269	4822 124 11583	2200UF 20% 35V
2270	4822 126 14118	100NF -20+80% 50V 08
2271	4822 126 14583	470NF 10% 16V XTR 08
2273	4822 126 13196	100NF 10% 0805 X7R 2
2274	4822 126 14583	470NF 10% 16V XTR 08
2275	4822 123 14024	16V 1000U 20%
2276	4822 126 13196	100NF 10% 0805 X7R 2
2277	4822 126 14583	470NF 10% 16V XTR 08
2278	4822 124 40242	1UF20% 63V
2280	4822 124 41584	100UF 20% 10V
2281	4822 126 14118	100NF -20+80% 50V 08
2282	4822 126 14583	470NF 10% 16V XTR 08
2283	4822 124 11769	220UF 20% 50V
2287	4822 124 40784	3300UF 20% 16V
2290	4822 124 41579	10UF 20% 50V
2295	4822 122 33177	10NF 20% X7R 50V
2297	4822 124 41579	10UF 20% 50V
2298	4822 126 13751	47NF10% X7R 63V
2301	5322 122 32654	22NF10%X7R 63V
2302	4822 124 81151	22UF 50V
2306	4822 124 41579	10UF 20% 50V
2307	5322 122 32287	4,7PF 5%NPO 50V
2310	4822 124 41576	2,2UF 20% 50V
2311	5322 122 34123	1NF10%X7R 50V
2313	4822 122 33575	220PF 5% NPO 63V CAS
2314	4822 126 13473	220NF80-20% 50V
2315	4822 124 81151	22UF 50V
2316	4822 124 41576	2,2UF 20% 50V
2317	5322 126 10223	4,7NF10%X7R 63V
2319	5322 122 34123	1NF10%X7R 50V
2321	4822 126 13473	220NF80-20% 50V
2322	5322 122 32531	100PF 5%NPO 50V
2324	5322 122 32287	4,7PF 5%NPO 50V
2325	4822 122 33575	220PF 5% NPO 63V CAS
2328	5322 126 10223	4,7NF10%X7R 63V
2330	4822 124 81151	22UF 50V
2331	5322 122 32531	100PF 5%NPO 50V
2335	5322 126 10223	4,7NF10%X7R 63V
2339	5322 122 32531	100PF 5%NPO 50V
2349	4822 124 41579	10UF 20% 50V
2350	4822 124 41829	1000UF20% 6,3V
2352	4822 124 81151	22UF 50V
2356	4822 126 12785	47NF Y5VTUB 50V
2358	4822 126 13473	220NF80-20% 50V
2359	4822 126 13473	220NF80-20% 50V
2365	4822 121 41857	10NF 5% 250V
2511	5322 122 32531	100PF 5%NPO 50V
2512	5322 122 32531	100PF 5%NPO 50V
2513	5322 122 32531	100PF 5%NPO 50V
2514	5322 122 32531	100PF 5%NPO 50V
2515	5322 122 32531	100PF 5%NPO 50V
2516	5322 122 32531	100PF 5%NPO 50V
2517	5322 122 32531	100PF 5%NPO 50V
2518	5322 122 32531	100PF 5%NPO 50V
2519	5322 122 32531	100PF 5%NPO 50V
2520	5322 122 32531	100PF 5%NPO 50V
2521	5322 122 32531	100PF 5%NPO 50V
2522	5322 122 32531	100PF 5%NPO 50V
2531	4822 126 13061	220NF20% Y5V 25V
2532	4822 126 13061	220NF20% Y5V 25V
2533	4822 124 41579	10UF 20% 50V
2534	4822 124 41579	10UF 20% 50V
2535	4822 124 41579	10UF 20% 50V
2536	4822 124 41579	10UF 20% 50V
2539	4822 124 81029	100UF20% 25V
2540	4822 124 40433	47UF20% 25V
2541	4822 124 40242	1UF20% 63V
2542	4822 124 40242	1UF20% 63V
2543	4822 124 81151	22UF 50V
2544	4822 124 81151	22UF 50V
2545	5322 122 32531	100PF 5%NPO 50V
2546	5322 122 32531	100PF 5%NPO 50V
2549	5322 122 32658	22PF 5% 50V
2550	5322 122 32658	22PF 5% 50V
2551	4822 126 10002	100NF20%Y5V 25V
2552	4822 126 10002	100NF20%Y5V 25V
2553	4822 124 41751	47UF 20% 50V
2554	4822 124 41751	47UF 20% 50V
2555	4822 126 10002	100NF20%Y5V 25V
2556	4822 126 10002	100NF20%Y5V 25V
2557	4822 124 41751	47UF 20% 50V
2558	4822 124 41751	47UF 20% 50V
2559	4822 126 12105	CER2 0805 X7R 50V 33
2563	4822 123 14025	2200U 20% 16V
2564	4822 124 41576	2,2UF 20% 50V
2565	4822 124 41576	2,2UF 20% 50V
2567	4822 124 40769	4,7UF20% 100V
2568	4822 124 40769	4,7UF20% 100V
2569	5322 122 32531	100PF 5%NPO 50V
2603	4822 124 81151	22UF 50V
2604	4822 124 81151	22UF 50V
2605	5322 122 32531	100PF 5%NPO 50V
2606	5322 122 32531	100PF 5%NPO 50V
2607	4822 124 41751	47UF 20% 50V
2608	4822 124 41751	47UF 20% 50V
2609	5322 122 32531	100PF 5%NPO 50V
2610	5322 122 32531	100PF 5%NPO 50V
2611	4822 124 81029	100UF20% 25V
2614	4822 124 81029	100UF20% 25V
2615	4822 122 33809	22NF20%Y5V 50V
2616	4822 122 33809	22NF20%Y5V 50V
2617	4822 124 41579	10UF 20% 50V
2618	4822 124 41579	10UF 20% 50V
2619	5322 122 32531	100PF 5%NPO 50V
2620	5322 122 32531	100PF 5%NPO 50V
2622	5322 122 32531	100PF 5%NPO 50V
2623	5322 122 32531	100PF 5%NPO 50V
2627	5322 122 32531	100PF 5%NPO 50V
2630	5322 121 42386	100NF 5% 63V
2631	5322 121 42386	100NF 5% 63V
2633	5322 122 32654	22NF10%X7R 63V
2634	5322 122 32654	22NF10%X7R 63V

ELECTRICAL PARTSLIST - MONO BOARD

CAPACITORS

2636	4822 126 13196	100NF 10% 0805 X7R 2
2637	4822 124 41751	47UF 20% 50V
2638	4822 126 13196	100NF 10% 0805 X7R 2
2639	4822 124 41751	47UF 20% 50V
2641	4822 124 40242	1UF20% 63V
2642	4822 124 40242	1UF20% 63V
2643	4822 124 40242	1UF20% 63V
2644	4822 124 40242	1UF20% 63V
2649	4822 124 40242	1UF20% 63V
2650	4822 124 40242	1UF20% 63V
2659	4822 124 41576	2,2UF 20% 50V
2660	4822 124 41576	2,2UF 20% 50V
2661	4822 124 41576	2,2UF 20% 50V
2662	4822 124 41576	2,2UF 20% 50V
2665	4822 121 43526	47NF 5% 250V
2666	4822 121 43526	47NF 5% 250V
2667	4822 121 43526	47NF 5% 250V
2668	4822 121 43526	47NF 5% 250V
2671	5322 122 31866	6,8NF10%X7R 63V
2672	5322 122 31866	6,8NF10%X7R 63V
2673	5322 122 31866	6,8NF10%X7R 63V
2674	5322 122 31866	6,8NF10%X7R 63V
2677	5322 122 32654	22NF10%X7R 63V
2678	5322 122 32654	22NF10%X7R 63V
2679	5322 122 32654	22NF10%X7R 63V
2680	5322 122 32654	22NF10%X7R 63V
2683	5322 122 32654	22NF10%X7R 63V
2684	5322 122 32654	22NF10%X7R 63V
2685	5322 122 32654	22NF10%X7R 63V
2686	5322 122 32654	22NF10%X7R 63V
2689	5322 121 42465	68NF 5% 63V
2690	5322 121 42465	68NF 5% 63V
2691	5322 121 42465	68NF 5% 63V
2692	5322 121 42465	68NF 5% 63V
2695	5322 121 42465	68NF 5% 63V
2696	5322 121 42465	68NF 5% 63V
2697	5322 121 42465	68NF 5% 63V
2698	5322 121 42465	68NF 5% 63V
2831	5322 122 32531	100PF 5%NPO 50V
2833	4822 122 33809	22NF20%Y5V 50V
2834	5322 122 32531	100PF 5%NPO 50V
2851	5322 122 32658	22PF 5% 50V
2852	5322 122 32658	22PF 5% 50V
2853	4822 124 81151	22UF 50V
2854	4822 124 81151	22UF 50V
2855	5322 122 32531	100PF 5%NPO 50V
2856	5322 122 32531	100PF 5%NPO 50V
2857	4822 126 13196	100NF 10% 0805 X7R 2
2858	4822 124 41751	47UF 20% 50V
2860	4822 124 41751	47UF 20% 50V
2861	5322 122 32654	22NF10%X7R 63V
2871	4822 122 33177	10NF 20% X7R 50V
2872	4822 122 33177	10NF 20% X7R 50V
2873	4822 122 33177	10NF 20% X7R 50V
2874	4822 122 33177	10NF 20% X7R 50V
2877	5322 121 42386	100NF 5% 63V
2878	5322 121 42386	100NF 5% 63V
2879	5322 121 42386	100NF 5% 63V
2880	5322 121 42386	100NF 5% 63V
2901	4822 124 81151	22UF 50V
2902	4822 124 41579	10UF 20% 50V
2903	5322 122 32287	4,7PF 5%NPO 50V
2904	4822 126 13751	47NF10% X7R 63V
2905	4822 124 41576	2,2UF 20% 50V
2906	5322 122 34123	1NF10%X7R 50V
2908	4822 126 13473	220NF80-20% 50V
2909	5322 126 10223	4,7NF10%X7R 63V
2910	4822 122 33575	220PF 5% NPO 63V CAS
2911	5322 122 32654	22NF10%X7R 63V
2912	4822 124 81151	22UF 50V
2913	4822 124 41576	2,2UF 20% 50V
2914	5322 122 34123	1NF10%X7R 50V
2916	4822 126 13473	220NF80-20% 50V
2917	5322 126 10223	4,7NF10%X7R 63V
2918	4822 122 33575	220PF 5% NPO 63V CAS
2919	4822 124 81151	22UF 50V
2920	4822 126 13473	220NF80-20% 50V
2921	4822 126 13473	220NF80-20% 50V
2922	5322 122 32287	4,7PF 5%NPO 50V
2923	4822 124 81151	22UF 50V
2924	4822 124 41579	10UF 20% 50V
2925	4822 124 41829	1000UF20% 6,3V
2926	4822 126 13196	100NF 10% 0805 X7R 2
2928	4822 122 33177	10NF 20% X7R 50V
2930	5322 122 32531	100PF 5%NPO 50V
2932	5322 122 32531	100PF 5%NPO 50V
2933	5322 122 32531	100PF 5%NPO 50V

RESISTORS

3251	4822 051 20471	470R00 5% 0,1W
3252	4822 051 20104	100K00 5% 0,1W
3253	4822 051 20104	100K00 5% 0,1W
3254 ▲	4822 117 11342	0R33 5% 2W
3256	4822 117 10833	10K 1% 0,1W
3257 ▲	4822 117 11342	0R33 5% 2W
3258	4822 051 20184	180K00 5% 0,1W
3259	4822 051 20681	680R00 5% 0,1W
3260	4822 117 10834	47K 1% 0,1W
3263	4822 051 20681	80R00 5% 0,1W
3264	4822 051 20104	100K00 5% 0,1W
3266	4822 051 20223	22K00 5% 0,1W
3267	4822 051 20392	3K90 5% 0,1W
3268	4822 051 20332	3K30 5% 0,1W
3269	4822 051 20332	3K30 5% 0,1W
3270 ▲	4822 052 10479	47R00 5% 0,33W
3271 ▲	4822 052 10479	47R00 5% 0,33W
3272	4822 051 20393	39K00 5% 0,1W
3291 ▲	4822 052 10109	10R00 5% 0,33W
3292	4822 051 20153	15K00 5% 0,1W
3293	4822 117 10833	10K 1% 0,1W
3294	4822 117 10833	10K 1% 0,1W
3295	4822 051 20153	15K00 5% 0,1W
3301 ▲	4822 052 10479	47R00 5% 0,33W
3304	4822 117 11148	56K 1% 0,1W
3305	4822 117 10834	47K 1% 0,1W
3306	4822 117 10834	47K 1% 0,1W
3307	4822 117 10834	47K 1% 0,1W
3308	4822 117 11148	56K 1% 0,1W
3309	4822 050 24708	4R70 1% 0,6W
3310	4822 051 20182	1K80 5% 0,1W
3311	4822 050 24708	4R70 1% 0,6W
3314	4822 117 11148	56K 1% 0,1W
3315	4822 051 20182	1K80 5% 0,1W
3319	4822 117 11148	56K 1% 0,1W
3326	4822 051 20333	33K00 5% 0,1W
3327	4822 117 11503	220R 1% 0.1W
3328 ▲	4822 052 10479	47R00 5% 0,33W
3329	4822 051 20104	100K00 5% 0,1W
3330	4822 117 10833	10K 1% 0,1W

ELECTRICAL PARTSLIST - MONO BOARD

RESISTORS

3334	4822 051 10102	1K00	2%	0,25W
3335	4822 051 10102	1K00	2%	0,25W
3337 ▲	4822 117 11744	0R22	5%	1W
3338 ▲	4822 117 11744	0R22	5%	1W
3339	4822 117 11139	1K5	1%	0,1W
3340	4822 117 11139	1K5	1%	0,1W
3341 ▲	4822 117 11744	0R22	5%	1W
3342 ▲	4822 117 11744	0R22	5%	1W
3352 ▲	4822 053 10478	4R70	5%	1W
3353 ▲	4822 053 10478	4R70	5%	1W
3356	4822 117 10834	47K	1%	0,1W
3357	4822 116 83864	10K	5%	0,5W
3358	4822 051 10102	1K00	2%	0,25W
3359	4822 051 20104	100K00	5%	0,1W
3360	4822 117 10833	10K	1%	0,1W
3361	4822 051 20471	470R00	5%	0,1W
3362	4822 051 20471	470R00	5%	0,1W
3511	4822 051 20101	100R00	5%	0,1W
3512	4822 051 20101	100R00	5%	0,1W
3513	4822 051 20223	22K00	5%	0,1W
3514	4822 051 20223	22K00	5%	0,1W
3515	4822 051 10102	1K00	2%	0,25W
3516	4822 051 10102	1K00	2%	0,25W
3517	4822 051 20393	39K00	5%	0,1W
3518	4822 051 20393	39K00	5%	0,1W
3519	4822 051 20822	8K20	5%	0,1W
3520	4822 051 20822	8K20	5%	0,1W
3521	4822 051 20393	39K00	5%	0,1W
3522	4822 051 20393	39K00	5%	0,1W
3523	4822 051 20822	8K20	5%	0,1W
3524	4822 051 20822	8K20	5%	0,1W
3525	4822 051 20393	39K00	5%	0,1W
3526	4822 051 20393	39K00	5%	0,1W
3527	4822 051 20822	8K20	5%	0,1W
3528	4822 051 20822	8K20	5%	0,1W
3529	4822 051 10102	1K00	2%	0,25W
3530	4822 051 10102	1K00	2%	0,25W
3531	4822 051 20393	39K00	5%	0,1W
3532	4822 051 20393	39K00	5%	0,1W
3533	4822 051 20822	8K20	5%	0,1W
3534	4822 051 20822	8K20	5%	0,1W
3541	4822 051 20104	100K00	5%	0,1W
3542	4822 051 20104	100K00	5%	0,1W
3543	4822 051 10102	1K00	2%	0,25W
3544	4822 051 10102	1K00	2%	0,25W
3545	4822 051 20392	3K90	5%	0,1W
3546	4822 051 20392	3K90	5%	0,1W
3547	4822 051 20182	1K80	5%	0,1W
3548	4822 051 20182	1K80	5%	0,1W
3551	4822 117 11504	270R	1%	0.1W
3552	4822 117 11504	270R	1%	0.1W
3553	4822 117 11504	270R	1%	0.1W
3554	4822 117 11504	270R	1%	0.1W
3555	4822 051 20332	3K30	5%	0,1W
3559	4822 051 20109	10R00	5%	0,1W
3560	4822 051 10102	1K00	2%	0,25W
3561 ▲	4822 052 10478	4R70	5%	0,33W
3562	4822 051 20471	470R00	5%	0,1W
3563	4822 051 10102	1K00	2%	0,25W
3601	4822 051 20101	100R00	5%	0,1W
3602	4822 051 20101	100R00	5%	0,1W
3603	4822 051 20104	100K00	5%	0,1W
3604	4822 051 20104	100K00	5%	0,1W
3605	4822 117 11383	12K	1%	0,1W
3606	4822 117 11383	12K	1%	0,1W
3607	4822 051 20333	33K00	5%	0,1W
3608	4822 051 20333	33K00	5%	0,1W
3609	4822 051 20121	120R00	5%	0,1W
3610	4822 051 20121	120R00	5%	0,1W
3611	4822 117 10834	47K	1%	0,1W
3612	4822 117 10834	47K	1%	0,1W
3627 ▲	4822 052 10109	10R00	5%	0,33W
3629 ▲	4822 052 10109	10R00	5%	0,33W
3630	4822 050 11002	1K00	1%	0,4W
3631	4822 050 11002	1K00	1%	0,4W
3632	4822 050 11002	1K00	1%	0,4W
3641	4822 051 20104	100K00	5%	0,1W
3642	4822 051 20104	100K00	5%	0,1W
3643	4822 051 20104	100K00	5%	0,1W
3644	4822 051 20104	100K00	5%	0,1W
3649	4822 051 20104	100K00	5%	0,1W
3650	4822 051 20104	100K00	5%	0,1W
3659	4822 117 12955	2K7	1%	0,1W 0805
3660	4822 117 12955	2K7	1%	0,1W 0805
3661	4822 051 20562	5K6	5%	0,1W 0805
3662	4822 051 20562	5K6	5%	0,1W 0805
3663	4822 117 12955	2K7	1%	0,1W 0805
3664	4822 117 12955	2K7	1%	0,1W 0805
3665	4822 051 20562	5K6	5%	0,1W 0805
3666	4822 051 20562	5K6	5%	0,1W 0805
3671	4822 051 20104	100K00	5%	0,1W
3672	4822 051 20104	100K00	5%	0,1W
3673	4822 117 11449	2K2	1%	0,1W
3674	4822 117 11449	2K2	1%	0,1W
3675	4822 051 20101	100R00	5%	0,1W
3676	4822 051 20101	100R00	5%	0,1W
3677	4822 051 20104	100K00	5%	0,1W
3678	4822 051 20104	100K00	5%	0,1W
3679	4822 117 11449	2K2	1%	0,1W
3680	4822 117 11449	2K2	1%	0,1W
3681	4822 051 20101	100R00	5%	0,1W
3682	4822 051 20101	100R00	5%	0,1W
3689	4822 117 11449	2K2	1%	0,1W
3690	4822 117 11449	2K2	1%	0,1W
3691	4822 116 52256	2K2	5%	0,5W
3692	4822 117 11449	2K2	1%	0,1W
3695	4822 117 13579	220K	1%	0.1W RC12H 0
3696	4822 117 10833	10K	1%	0,1W
3697	4822 116 52257	22K	5%	0,5W
3698	4822 117 13579	220K	1%	0.1W RC12H 0
3699	4822 117 10833	10K	1%	0,1W
3700	4822 051 20223	22K00	5%	0,1W
3831	4822 051 20101	100R00	5%	0,1W
3834	4822 051 20101	100R00	5%	0,1W
3851	4822 051 20472	4K70	5%	0,1W
3852	4822 051 20472	4K70	5%	0,1W
3853	4822 117 10833	10K	1%	0,1W
3854	4822 117 10833	10K	1%	0,1W
3855	4822 117 11504	270R	1%	0.1W
3856	4822 117 11504	270R	1%	0.1W
3857	4822 051 20104	100K00	5%	0,1W
3858	4822 051 20104	100K00	5%	0,1W
3859	4822 117 10833	10K	1%	0,1W
3860	4822 117 10833	10K	1%	0,1W
3871	4822 051 20332	3K30	5%	0,1W
3872	4822 051 20332	3K30	5%	0,1W
3873	4822 051 10102	1K00	2%	0,25W
3874	4822 051 10102	1K00	2%	0,25W
3875	4822 051 20332	3K30	5%	0,1W
3876	4822 051 20332	3K30	5%	0,1W

ELECTRICAL PARTSLIST - MONO BOARD

RESISTORS

3877	4822 051 10102	1K00	2%	0,25W
3878	4822 051 10102	1K00	2%	0,25W
3883	4822 117 11383	12K	1%	0,1W
3884	4822 117 11383	12K	1%	0,1W
3885	4822 117 11383	12K	1%	0,1W
3886	4822 117 11383	12K	1%	0,1W
3889	4822 117 11449	2K2	1%	0,1W
3890	4822 117 11449	2K2	1%	0,1W
3891	4822 051 20562	5K6	5%	0,1W 0805
3892	4822 051 20562	5K6	5%	0,1W 0805
3893	4822 051 20562	5K6	5%	0,1W 0805
3894	4822 051 20562	5K6	5%	0,1W 0805
3901 ▲	4822 052 10479	47R00	5%	0,33W
3902	4822 117 11148	56K	1%	0,1W
3903	4822 117 10834	47K	1%	0,1W
3905	4822 050 24708	4R70	1%	0,6W
3906	4822 117 11148	56K	1%	0,1W
3908	4822 051 20182	1K80	5%	0,1W
3910	4822 050 24708	4R70	1%	0,6W
3911	4822 117 11148	56K	1%	0,1W
3913	4822 051 20182	1K80	5%	0,1W
3914	4822 117 11148	56K	1%	0,1W
3915 ▲	4822 052 10479	47R00	5%	0,33W
3916 ▲	4822 053 10478	4R70	5%	1W
3917	4822 116 52271	33K	5%	0,5W
3918	4822 117 11503	220R	1%	0.1W
3919 ▲	4822 053 10478	4R70	5%	1W
3920	4822 051 20104	100K00	5%	0,1W
3921	4822 051 10102	1K00	2%	0,25W
3922	4822 051 10102	1K00	2%	0,25W
3925	4822 117 10833	10K	1%	0,1W
3926 ▲	4822 117 11744	0R22	5%	1W
3927 ▲	4822 117 11744	0R22	5%	1W
3928	4822 117 11139	1K5	1%	0,1W
3929	4822 117 11139	1K5	1%	0,1W
3930 ▲	4822 117 11744	0R22	5%	1W
3931 ▲	4822 117 11744	0R22	5%	1W
3932	4822 117 10834	47K	1%	0,1W
3933	4822 116 83864	10K	5%	0,5W
3935	4822 051 10102	1K00	2%	0,25W
3936	4822 051 20104	100K00	5%	0,1W
3937	4822 117 10833	10K	1%	0,1W
3938	4822 117 11449	2K2	1%	0,1W
3939	4822 117 11449	2K2	1%	0,1W
3942	4822 051 20109	10R00	5%	0,1W
3943	4822 117 10833	10K	1%	0,1W
3946	4822 051 20471	470R00	5%	0,1W
3947	4822 051 20471	470R00	5%	0,1W

JUMPERS

4251	4822 051 20008	0R00 JUMP. (0805)
4252	4822 051 20008	0R00 JUMP. (0805)
4257	4822 051 20008	0R00 JUMP. (0805)
4258	4822 051 20008	0R00 JUMP. (0805)
4283	4822 051 20008	0R00 JUMP. (0805)
4284	4822 051 20008	0R00 JUMP. (0805)
4285	4822 051 20008	0R00 JUMP. (0805)
4287	4822 051 20008	0R00 JUMP. (0805)
4320	4822 051 20008	0R00 JUMP. (0805)
4501	4822 051 20008	0R00 JUMP. (0805)
4502	4822 051 20008	0R00 JUMP. (0805)
4503	4822 051 20008	0R00 JUMP. (0805)
4506	4822 051 20008	0R00 JUMP. (0805)
4512	4822 051 20008	0R00 JUMP. (0805)
4513	4822 051 20008	0R00 JUMP. (0805)
4514	4822 051 20008	0R00 JUMP. (0805)
4515	4822 051 20008	0R00 JUMP. (0805)
4516	4822 051 20008	0R00 JUMP. (0805)
4517	4822 051 20008	0R00 JUMP. (0805)
4518	4822 051 20008	0R00 JUMP. (0805)
4519	4822 051 20008	0R00 JUMP. (0805)
4520	4822 051 20008	0R00 JUMP. (0805)
4521	4822 051 20008	0R00 JUMP. (0805)
4522	4822 051 20008	0R00 JUMP. (0805)
4523	4822 051 20008	0R00 JUMP. (0805)
4524	4822 051 20008	0R00 JUMP. (0805)
4526	4822 051 20008	0R00 JUMP. (0805)
4528	4822 051 20008	0R00 JUMP. (0805)
4529	4822 051 20008	0R00 JUMP. (0805)
4530	4822 051 20008	0R00 JUMP. (0805)
4531	4822 051 20008	0R00 JUMP. (0805)
4532	4822 051 20008	0R00 JUMP. (0805)
4533	4822 051 20008	0R00 JUMP. (0805)
4534	4822 051 20008	0R00 JUMP. (0805)
4535	4822 051 20008	0R00 JUMP. (0805)
4537	4822 051 20008	0R00 JUMP. (0805)
4538	4822 051 20008	0R00 JUMP. (0805)
4539	4822 051 20008	0R00 JUMP. (0805)
4540	4822 051 20008	0R00 JUMP. (0805)
4541	4822 051 20008	0R00 JUMP. (0805)
4542	4822 051 20008	0R00 JUMP. (0805)
4543	4822 051 20008	0R00 JUMP. (0805)
4544	4822 051 20008	0R00 JUMP. (0805)
4545	4822 051 20008	0R00 JUMP. (0805)
4548	4822 051 20008	0R00 JUMP. (0805)
4550	4822 051 20008	0R00 JUMP. (0805)
4551	4822 051 20008	0R00 JUMP. (0805)
4552	4822 051 20008	0R00 JUMP. (0805)
4553	4822 051 20008	0R00 JUMP. (0805)
4555	4822 051 20008	0R00 JUMP. (0805)
4556	4822 051 20008	0R00 JUMP. (0805)
4557	4822 051 20008	0R00 JUMP. (0805)
4558	4822 051 20008	0R00 JUMP. (0805)
4559	4822 051 20008	0R00 JUMP. (0805)
4560	4822 051 20008	0R00 JUMP. (0805)
4563	4822 051 20008	0R00 JUMP. (0805)
4564	4822 051 20008	0R00 JUMP. (0805)
4641	4822 051 20008	0R00 JUMP. (0805)
4651	4822 051 20008	0R00 JUMP. (0805)
4652	4822 051 20008	0R00 JUMP. (0805)
4801	4822 051 20008	0R00 JUMP. (0805)
4802	4822 051 20008	0R00 JUMP. (0805)
4803	4822 051 20008	0R00 JUMP. (0805)
4804	4822 051 20008	0R00 JUMP. (0805)
4805	4822 051 20008	0R00 JUMP. (0805)
4831	4822 051 20008	0R00 JUMP. (0805)
4832	4822 051 20008	0R00 JUMP. (0805)
4833	4822 051 20008	0R00 JUMP. (0805)
4902	4822 051 20008	0R00 JUMP. (0805)
4903	4822 051 20008	0R00 JUMP. (0805)
4905	4822 051 20008	0R00 JUMP. (0805)
4907	4822 051 20008	0R00 JUMP. (0805)
4908	4822 051 20008	0R00 JUMP. (0805)
4909	4822 051 20008	0R00 JUMP. (0805)
4910	4822 051 20008	0R00 JUMP. (0805)
4913	4822 051 20008	0R00 JUMP. (0805)
4914	4822 051 20008	0R00 JUMP. (0805)
4915	4822 051 20008	0R00 JUMP. (0805)
4916	4822 051 20008	0R00 JUMP. (0805)

ELECTRICAL PARTSLIST - MONO BOARD

JUMPERS

4917	4822 051 20008	0R00 JUMP. (0805)
4918	4822 051 20008	0R00 JUMP. (0805)

FILTERS

5302	4822 157 62255	COIL 18,5 TURNS
5304	4822 157 62255	COIL 18,5 TURNS
5901	4822 157 62255	COIL 18,5 TURNS
5902	4822 157 62255	COIL 18,5

DIODES

6251 ▲	4822 130 82078	D5SBA20
6257	4822 130 31878	1N4003G
6258	4822 130 31878	1N4003G
6259	4822 130 31878	1N4003G
6260	4822 209 33575	L7812CP
6261	4822 130 31878	1N4003G
6262	4822 130 31878	1N4003G
6263	4822 130 31878	1N4003G
6265	4822 209 31841	L7805CP
6267	4822 209 31841	L7805CP
6268	4822 130 31878	1N4003G
6270	4822 130 34278	BZX79-B6V8
6271	4822 130 30621	1N4148
6274	4822 130 31878	1N4003G
6275	4822 130 31878	1N4003G
6276	4822 130 34173	BZX79-B5V6
6279	4822 130 30621	1N4148
6280	4822 130 34281	BZX79-B15
6281	4822 130 34281	BZX79-B15
6289	4822 130 30621	1N4148
6290	4822 130 30621	1N4148
6304	5322 130 31504	BZX79-B3V3
6305	4822 130 30621	1N4148
6501	4822 130 30621	1N4148
6601	4822 130 30621	1N4148
6602	4822 130 30621	1N4148
6641	4822 130 30621	1N4148
6642	4822 130 30621	1N4148
6643	4822 130 30621	1N4148
6644	4822 130 30621	1N4148
6647	4822 130 30621	1N4148
6648	4822 130 30621	1N4148
6649	4822 130 31878	1N4003G
6650 ▲	4822 130 61219	BZX79-B10
6902	4822 130 30621	1N4148
6903	5322 130 31504	BZX79-B3V3

TRANSISTORS

7253	4822 130 60511	BC847B
7255	5322 130 60508	BC857B
7256	4822 130 60511	BC847B
7257	4822 130 41246	BC327-25
7258	4822 130 41246	BC327-25
7259	4822 130 60511	BC847B
7260	4822 130 60511	BC847B
7261	5322 130 60508	BC857B
7303	4822 209 17385	STK496-07
7304	4822 130 60511	BC847B
7305	4822 130 60511	BC847B
7306	4822 130 60511	BC847B
7309	5322 130 60508	BC857B
7310	4822 130 60511	BC847B
7501	4822 209 72748	LC7821
7503	4822 209 83357	NJM4560M
7601	4822 209 83357	NJM4560M
7621	4822 130 42615	BC817-40
7622	4822 130 42615	BC817-40
7641	4822 209 17386	TDA7437T
7642	4822 209 17386	TDA7437T
7644	4822 130 41344	BC337-40
7651	4822 130 42615	BC817-40
7652	4822 130 42615	BC817-40
7653	4822 130 42615	BC817-40
7654	4822 130 42615	BC817-40
7657	5322 130 60508	BC857B
7658	5322 130 60508	BC857B
7660	4822 209 83357	NJM4560M
7661	4822 130 42615	BC817-40
7662	4822 130 42615	BC817-40
7901	4822 209 17385	STK496-070
7902	4822 130 60511	BC847B
7903	4822 130 60511	BC847B
7904	4822 130 60511	BC847B
7906	5322 130 60508	BC857B
7908	5322 130 60508	BC857B
7909	4822 130 60511	BC847B
7910	4822 130 11597	BD534FP

FR735 & MX735

A99 - 450

5320

Service
Service
Service

Product Service Group CE Audio

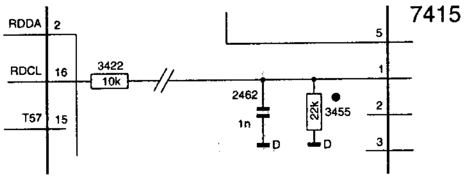
Service Information

CHANGES DURING PRODUCTION

Front Board:

Add	2462	5322 122 31647	1nF 63V

(Reason: solve interferences on RDS CLK line)
Location on drawing:



Change	3438	to 220k	4822 117 13579
Change	3440	to 47R	4822 051 20479
Change	3441	to 82k	4822 117 11149

(Reason: to minimize tolerances on P50 levels)
These changes are implemented in Layout stage .3
New layout drawing is enclosed.

Dolby Pro Logic Board:

Add	2764	5322 122 34123	1nF 50V
Add	2765	5322 122 32268	470pF 50V
Add	3749	4822 117 10965	18k 1% 0.1W
Add	3750	4822 117 10833	10k 1% 0.1W
Add	3751	4822 051 20153	15k 01% 0.1W

Change	3715	to 6k8	4822 117 11507
Change	3728	to 47k	4822 117 10834

(Reason: improvement for audible crakling sound in "Hall" mode).
These changes are implemented in Layout stage .2
New drawings are enclosed.

Mains Board:

Add	3059	4822 050 21003	10k 1/6W 5%
Add	6065	4822 130 31878	1N4003G

(Reason: improvement of mains behaviours)

Add	2055	4822 126 14084	4n7 250V

(Reason: reduction of plops during switch on)
These changes are implemented in Layout stage .4
New drawings are enclosed.

Mono Board:

Change	2311	to 470p	5322 122 32268
Change	2319	to 470p	5322 122 32268
Change	2541	to 10uF	4822 124 40248
Change	2542	to 10uF	4822 124 40248
Change	2543	to 100uF	4822 124 41584
Change	2544	to 100uF	4822 124 41584
Change	2906	to 470p	5322 122 32268
Change	2914	to 470p	5322 122 32268

(Reason: performance increase (bandwidth increase))

Add	2612	4822 124 40248	10uF 50V
Add	2613	4822 124 40248	10uF 50V
Add	3618	4822 117 10834	47k 5%
Add	3619	4822 117 10834	47k 5%

(Reason: to solve switch on plop)

Change	2605	to 47p	4822 126 13692
Change	2606	to 47p	4822 126 13692
Change	2609	to 220p	4822 122 33575
Change	2610	to 220p	4822 122 33575
Change	3515	to 470R	4822 051 20471
Change	3516	to 470R	4822 051 20471

Add	2508	5322 122 32531	100p 50V
Add	2509	5322 122 32531	100p 50V
Add	2868	4822 122 33575	220p 50V
Add	2869	4822 122 33575	220p 50V

1999 - 07 - 08

3104 215 50010

Add	2937	4822 126 10794	220p 50V
Add	3620	4822 116 52175	100R 5%
Add	3621	4822 116 52175	100R 5%
Add	3636	4822 051 20471	470R 5%
Add	3637	4822 051 20471	470R 5%
Add	3638	4822 051 20471	470R 5%
Add	3639	4822 051 20471	470R 5%

(Reason: EMC performance)

Change	2883	to 1n	5322 126 10511
Change	2884	to 1n	5322 126 10511
Change	2885	to 1n	5322 126 10511
Change	2886	to 2n2	4822 122 33127
Change	3940	to 220R	4822 117 11503
Change	3941	to 220R	4822 117 11503
Change	3944	to 220R	4822 117 11503
Change	3945	to 220R	4822 117 11503

(Reason: solve stability)

Change	3519	to 18k	4822 117 10965
Change	3520	to 18k	4822 117 10965
Change	3523	to 18k	4822 117 10965
Change	3524	to 18k	4822 117 10965
Change	3527	to 18k	4822 117 10965
Change	3528	to 18k	4822 117 10965
Change	3529	to 470R	4822 051 20471
Change	3530	to 470R	4822 051 20471
Change	3533	to 18k	4822 117 10965
Change	3534	to 18k	4822 117 10965
Change	3541	to 39k	4822 051 20393
Change	3542	to 39k	4822 051 20393
Change	3543	to 1k5	4822 117 11139
Change	3544	to 1k5	4822 117 11139
Change	3545	to 3k3	4822 051 20332
Change	3546	to 3k3	4822 051 20332
Change	3513	to 47k	4822 117 10834
Change	3514	to 47k	4822 117 10834

(Reason: optimize input sensitivity)

Change	7601	to NJM4556AM	4822 209 31378
Add	3622	4822 051 20121	120R 5%
Add	3623	4822 051 20121	120R 5%

(Reason: increase headphone level)

Change	7910	to BD242BFP	9322 139 22687

(Reason: perfered componet)

Add	2832	4822 126 14585	100n 16V
Add	3832	4822 051 20479	47R 5%

(Reason: P50 system disturbance)

Add	3950	4822 051 20101	100R 5%
Add	3951	4822 051 20101	100R 5%
Add	4254	4822 051 20008	jumper 0E
Add	4255	4822 051 20008	jumper 0E
Add	4256	4822 051 20008	jumper 0E
Add	4259	4822 051 20008	jumper 0E
Add	4260	4822 051 20008	jumper 0E
Add	4831	4822 051 20008	jumper 0E

Delete	3511
Delete	3512
Delete	3559
Delete	3942
Delete	4534
Delete	4535
Delete	4907
Delete	4913

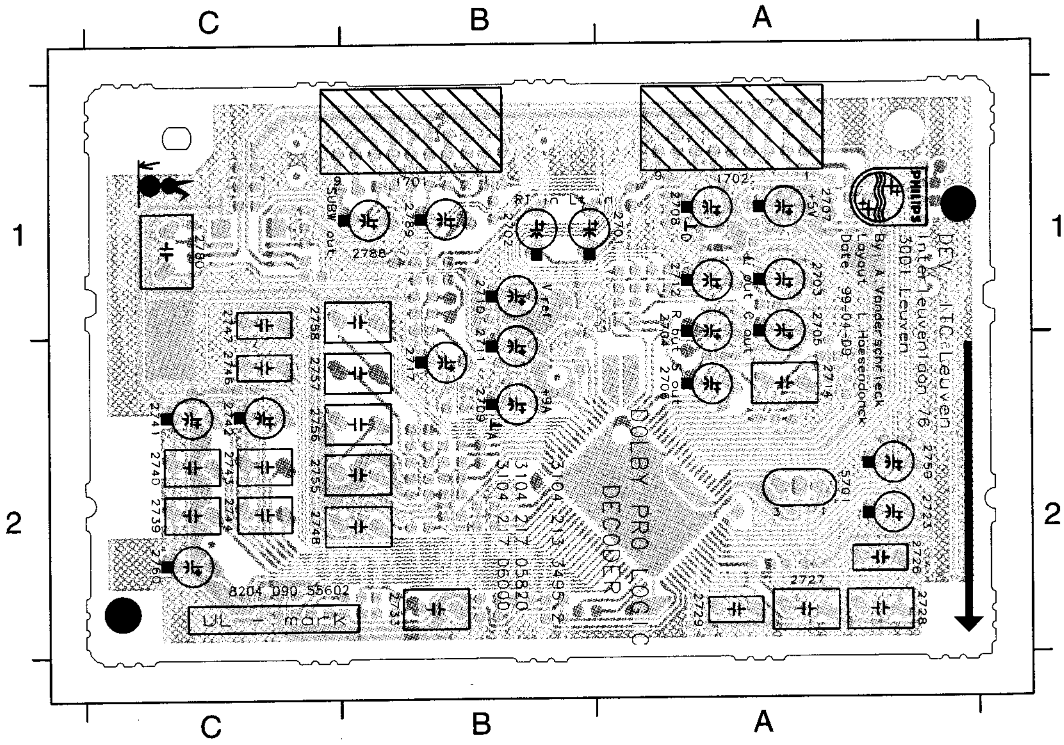
(Reason: update to new layout .3

Add	6831	4822 130 30621	1N4148
Add	6832	4822 130 30621	1N4148

(Reason: ESD performance)

These changes are implemented in Layout stage .3
New drawings are enclosed.

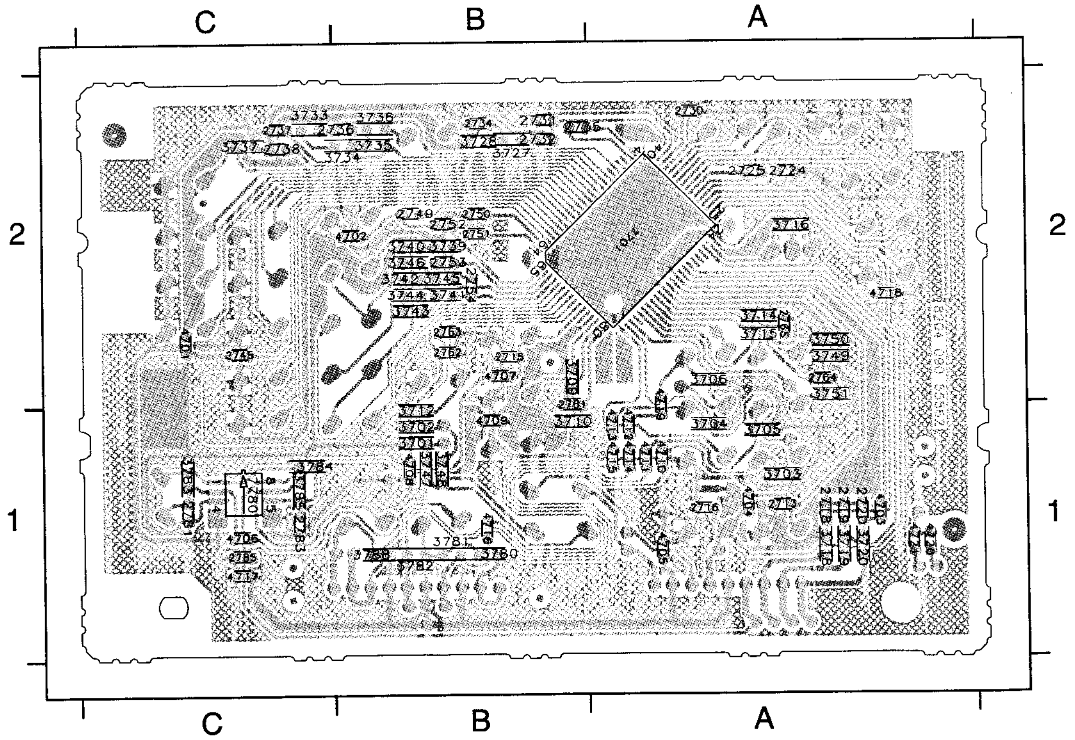
DOLBY PRO LOGIC BOARD - COMPONENT VIEW



C
B
A
1
2
DOLBY PRO LOGIC DECODER
PHILIPS
DEV. ITC Leuven
Interleuvenlaan 76
3001 Leuven
By: A. Vanderschrieck
Layout: L. Hoesendonck
Date: 99-04-09
8204 090 55602
UL - mark
SUBW out
V ref
+5V
1701
1702
3104 217 05820
3104 213 3495.2

1701	B1
1702	A1
2701	A1
2702	B1
2703	A1
2704	A1
2705	A1
2706	A2
2707	A1
2708	A1
2709	B2
2710	B1
2711	B2
2712	A1
2714	A2
2717	B2
2723	A2
2726	A2
2727	A2
2728	A2
2729	A2
2733	B2
2739	C2
2740	C2
2741	C2
2742	C2
2743	C2
2744	C2
2746	C2
2747	C1
2748	C2
2755	C2
2756	C2
2757	C2
2758	C1
2759	A2
2760	C2
2780	C1
2788	B1
2789	B1
5701	A2

DOLBY PRO LOGIC BOARD - COPPER SIDE VIEW



C
B
A
1
2
7701
7780

2713	A1
2715	B2
2716	A1
2718	A1
2719	A1
2720	A1
2724	A2
2725	A2
2730	A2
2731	B2
2732	B2
2734	B2
2735	B2
2736	B2
2737	C2
2738	C2
2745	C2
2749	B2
2750	B2
2751	B2
2752	B2
2753	B2
2754	B2
2761	A2
2762	B2
2763	B2
2764	A2
2765	A2
2781	C1
2783	C1
2785	C1
3701	B1
3702	B1
3703	A1
3704	A1
3705	A1
3706	A2
3709	B2
3710	B1
3712	B2
3714	A2
3715	A2
3716	A2
3718	A1
3719	A1
3720	A1
3727	B2
3728	B2
3733	C2
3734	B2
3735	B2
3736	B2
3737	C2
3739	B2
3740	B2
3741	B2
3742	B2
3743	B2
3744	B2
3745	B2
3746	B2
3747	B1
3748	B1
3749	A2
3750	A2
3751	A2
3780	B1
3781	B1
3782	B1
3783	C1
3784	C1
3785	C1
3788	B1
4701	C2
4702	C2
4703	A1
4704	A1
4705	A1
4706	C1
4707	B2
4708	B1
4709	B1
4710	A1
4711	A1
4712	A1
4713	A1
4714	A1
4715	A1
4716	B1
4717	C1
4718	A2
4719	A2
4720	A1
4721	A1
7701	A2
7780	C1